











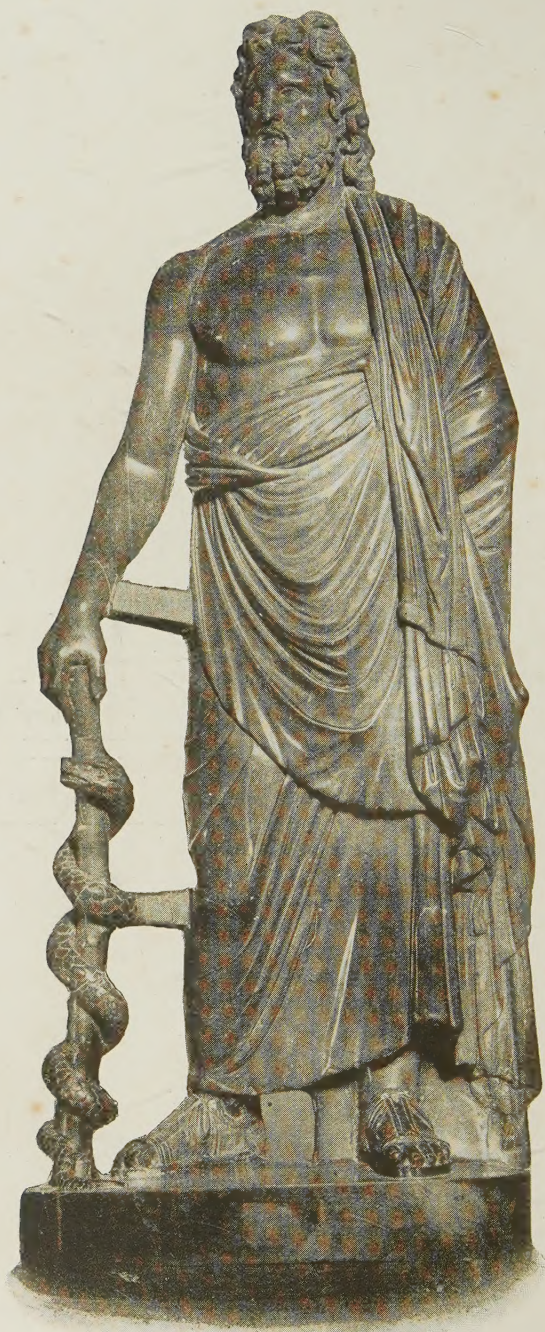






✦ THE FAMILY ✦  
ENCYCLOPÆDIA  
OF MEDICINE






### ÆSCULAPIUS THE FATHER OF MEDICINE

From the sculpture in the Capitoline Museum, Rome. The serpent twined round the god's staff is a symbol of renovation.

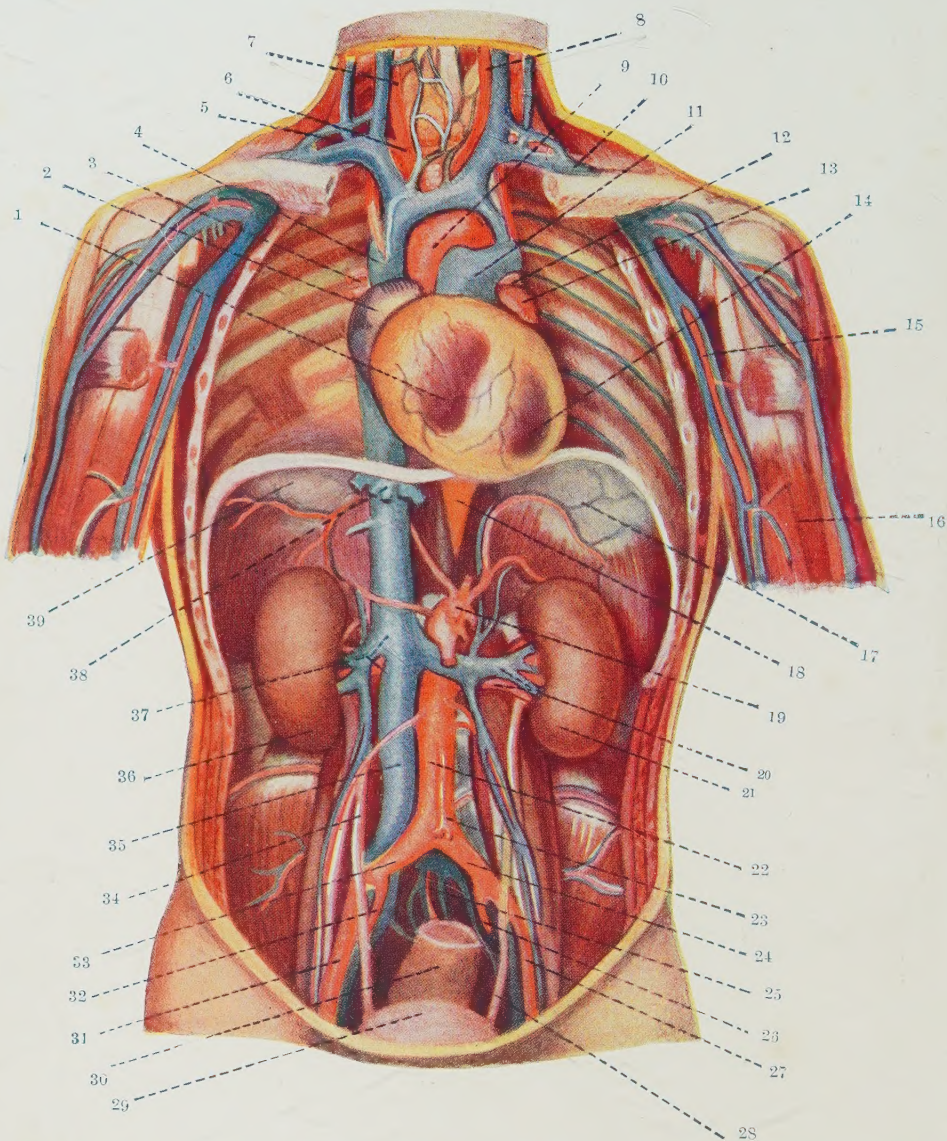




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PHYSIOLOGICAL DIAGRAM, SHOWING THE PRINCIPAL ARTERIES AND VEINS AND OTHER STRUCTURES OF THE CHEST AND ABDOMEN

- |                                   |                                 |  |  |
|-----------------------------------|---------------------------------|--|--|
| 1. Right ventricle of heart.      | 9. Aorta.                       | 20. Renal vein and artery, (left).             | 30. Rectum.  |
| 2. Right auricle of heart.        | 10. Subclavian artery (left).   | 21. Left kidney.                               | 31 & 32. Internal and external iliac arteries (right). |
| 3. Right pulmonary vein.          | 11. Pulmonary artery.           | 22. Abdominal aorta.                           | 33. Common iliac artery (right).                       |
| 4. Superior vena cava.            | 12. Pulmonary vein (left).      | 23. Inferior mesenteric artery (left).         | 34. Ureter (right).                                    |
| 5. Subclavian artery (right).     | 13. Left auricle of heart.      | 24. Common iliac artery (left).                | 35. Inferior vena cava.                                |
| 6. Innominate artery (right).     | 14. Left ventricle of heart.    | 25. Sacral artery.                             | 36. Right kidney.                                      |
| 7. Common carotid artery (right). | 15. Brachial artery (left).     | 26 & 27. Internal and external iliac arteries. | 37. Renal artery and vein (right).                     |
| 8. Common carotid artery (left).  | 16. Biceps muscle (left).       | 28. Ureter (left).                             | 38. Hepatic veins.                                     |
|                                   | 17. Diaphragm.                  | 29. Bladder.                                   | 39. Diaphragm.   |
|                                   | 18. Abdominal aorta.            |  |  |
|                                   | 19. Superior mesenteric artery. |  |  |

*The colouring (red for arteries and blue for veins) is, of course, conventional.* FRONTISPIECE

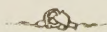


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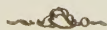
♦ THE FAMILY ♦  
ENCYCLOPÆDIA  
OF  
MEDICINE



Edited by  
H H Riddle M.D.(Cantab)



VOLUME I  
ABDOMEN-DROWNING



THE AMALGAMATED PRESS  
*The FLEETWAY HOUSE*  
LONDON  
1914



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# ♦ THE FAMILY ♦ ENCYCLOPÆDIA OF MEDICINE

EDITED BY

HUGH H. RIDDLE, M.D., (Cantab.)

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- Harold Spitta, M.D.**, Bacteriologist to the Households of H.M. the King and H.M. Queen Alexandra; Bacteriologist and Lecturer on Bacteriology, St. George's Hospital; Lecturer on Public Health and Hygiene, St. George's Hospital. *Vaccine Treatment and Immunity*
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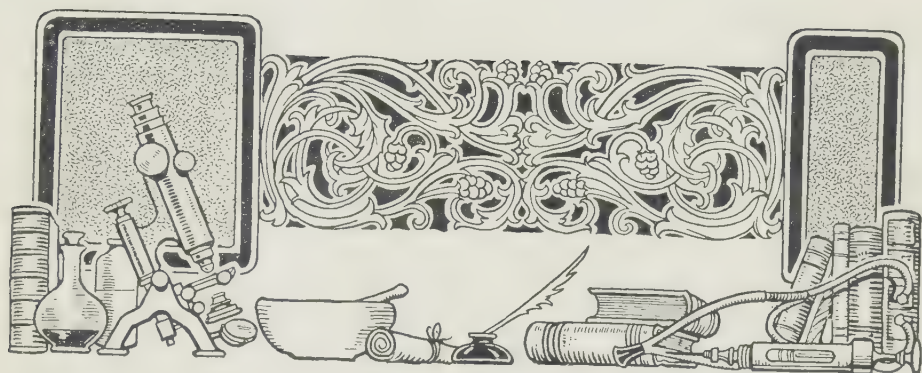
To write unassisted an authoritative encyclopædia embracing the vast subjects of Medicine, Surgery, Diseases of Women, Midwifery, Diseases of the Skin, Eyes, Ears, Nose, and Throat, etc., would be an overwhelming task, no matter how sound the author's knowledge might be on his own special subjects. When approached by his publishers to compile a thoroughly up-to-date and instructive work on the modern scientific treatment of disease, which could be readily understood by the layman, the editor refused even to consider the possibility of attempting a task of such magnitude until he had assured himself of obtaining active co-operation and assistance from a large number of his friends and acquaintances, including the above distinguished members of the profession, to whom he hereby acknowledges his great indebtedness for invaluable assistance.

In addition to his acknowledgments to the above eminent practitioners, the editor wishes to express his thanks to the following gentlemen for permission to reproduce a quantity of excellent plates and figures :

Dr. J. H. Sequeira	" Diseases of the Skin."
Dr. W. Hanna	" Studies in Smallpox."
Dr. Herbert French	" Index of Differential Diagnosis."
Dr. R. C. Cabot (of Boston)	" Physical Diagnosis."

The editor's thanks are also due to the authorities of Guy's, the London, and St. Bartholomew's Hospitals for permission to reproduce, from the collections of carefully and accurately prepared specimens, drawings and photographs in their Museums, hundreds of the illustrations for this work.

Finally, the editor wishes to express his indebtedness to Mr. F. W. Gamble, of Allen and Hanbury's, Ltd., Dispensing Chemists, who has kindly gone over the final proof of every prescription in the book ; and also to Messrs. Arnold & Sons, and Messrs. Allen & Hanbury's, Ltd., for the loan of blocks of surgical instruments.



## *INTRODUCTION*



THE old, old days when the doctor simply glanced at his patient, felt his pulse, mumbled a few words of Latin, and wrote out a prescription with many hieroglyphics, meaningless to the patient, have gone for ever.

The great wave of education which in the last three-quarters of a century has broken down, once for all, the insuperable barriers which until that time separated the mere handful of the "learned" from the myriads of the "ignorant," has scattered the clouds of mystery which enveloped all things relating to the treatment of sickness and disease. The average patient no longer looks on his family doctor with limitless awe and wonder as a potential worker of miracles. He consults him rather as a man who has made it his business to master every detail of modern scientific methods for preventing and curing disease, of which methods the patient himself is learning more and more every year.

With the public's increasing knowledge of the why and the wherefore of disease, physicians are able more and more to get their patients to co-operate with them in their efforts to prevent illnesses.

The passing of the old practice of deluging the sick man with drugs, and the growth of more scientific and modern methods of escaping disease, have demanded that the doctor should make a real confidant of his patient. As a result, the feeling that the doctor and his patient must be to a certain



extent antagonists, the one carefully hiding, under unintelligible, many-syllabled names, his simplest actions, and the other constantly doing his best to break down the artificial barriers between himself and his doctor, has in the past few years disappeared. It has been replaced by a much more sensible companionship, which, after all, is the only common-sense position possible in two persons who have such an entirely similar object in view—namely, the healing of the patient.

That the leaders of the medical profession fully realise how a clear knowledge of the things which lead up to disease will help them in keeping their patients in health, is shown by the long list of notable practitioners who have lent the Editor their invaluable assistance in revising and overlooking the subjects which come within their individual specialities. The aid these practitioners, consultants and professors of world-wide celebrity, have given alone made it possible for the Editor to produce an authoritative work, which is, in very truth, an encyclopædia covering the many branches of medicine, surgery, women's ailments, and the eye, ear, skin, etc.

One of the greatest difficulties the physician has to combat in his battle against disease, is the stubborn ignorance which, founded on baseless tradition, constantly leads the patient either to scorn or, at the best simply to neglect to follow his medical attendant's advice.

It is to illumine this immense cloud of ignorant and unjustified superstition with the sunlight of accurate knowledge that this book has been written.

It is in no way intended to be a *rival* to the doctor, but, on the contrary, to be a help to him, since by the knowledge obtained from it the reader may be led, perhaps months earlier than otherwise, to recognise disease in its earliest stages, and so present himself for treatment while a cure is still readily obtainable.

While the writing of the present work was still under consideration, one of England's most famous surgeons, a world-wide authority on the subject of cancer in women, was asked whether or not he thought the medical profession would welcome a work of this sort, written **The Layman's Right to Know** frankly for the educated layman, who nowadays realises that he has a full right to know all that he can understand about the causation and prevention of disease.

The great specialist answered the query with another question:—  
“What particular class of women would you think supply the great

majority of those who come to me condemned to speedy death from cancer, because, through ignorance, they have allowed the early stages of the disease, when a cure was possible, to slip by unnoticed?"

He gave the reply himself:—"The wives of doctors. If there is this appalling ignorance of the early symptoms of disease in the very households of physicians, how abysmal must be the ignorance in the ordinary home!"

Ignorance of simple measures that would avoid disease, scotch ailments in their early stages, and prevent illness which ought never to become fatal, kills its tens of thousands every year in this country.

Measles, a disease which most mothers regard with equanimity as a "harmless ailment" the children must go through with some time, caused 12,696 deaths in England and Wales in 1912. In a very large proportion of these cases the loss of life was directly due to the ignorance of the mother, to her fatal failure to realise that measles is a "harmless ailment" only when treated with a full knowledge of its possible risks.

Another ailment in which the ignorance of mothers is paid for in a harrowing toll of children's lives is whooping-cough. No less than 8,250 little victims were sacrificed in 1912 to this "harmless" disease, because its fatal possibilities were not recognised in time and adequately guarded against.

**The Penalties  
of Ignorance**

In no disease has a spread of general knowledge as to its causation and methods of attack given better results as a preventive than in consumption. Nevertheless, despite the vigorous educative campaigns which have been carried out in various parts of the country, consumption of the lungs, or pulmonary tuberculosis, still claims over fifty thousand victims every year in the United Kingdom, disables at least one hundred and fifty thousand more, while there are probably over five hundred thousand persons who are going about their daily pursuits though carrying within them the fatal germs of the Great White Plague.

The disease is the direct cause of one-eleventh of the pauperism in England and Wales, a charge on the State of one million sterling per annum. (H. G. Sutherland.)

No medicine or drug treatments can hope to stamp out this terrible scourge. If, as many doctors optimistically insist will be the case, it is finally stamped out of these islands (as typhus, the one-time deadly gaol fever, has been), it will be through the public learning all there is to



know about the methods of attack of the tubercle bacilli. Forewarned by a thorough knowledge of these methods of attack, they may be forearmed against it.

In consumption it is essential that the general public should know as clearly as the doctor himself how the disease is caught and how avoided, since both the escaping of it, and the actual means to be taken to throw it off when once it has attacked the system, *must be carried out almost entirely by the patient himself.*

For a very different, but equally important reason, it is vital that every layman and laywoman should know all there is to know about that most dread of all scourges—cancer.

The only hope of permanent cure in cancer (as far as our present knowledge goes) is a complete removal of the growth by the surgeon at the earliest possible stage in its development. The fact that *one woman out of seven*, and *one man out of eleven die of cancer*, is to a very great extent due to the victims' lack of that knowledge, which in the very earliest

stages of the disease should warn them that the abnormalities they notice in themselves are developing cancers.

Here a knowledge of all there is to be known about cancer is of vital importance, not (as in the case of consumption) because it allows the patient to carry out the cure for himself, but because it should lead him to the surgeon before the earlier months of the growth's development, the months in which alone a cure can be looked for with any confidence, have passed away for ever.

It is to supply in readily understandable language the essential knowledge, the possession of which alone can allow the patient to co-operate fully with his physician, and to replace time-honoured but totally unfounded superstitions and "old-wives' maxims" with a scientific and up-to-date knowledge of facts, that this work is offered to the public.

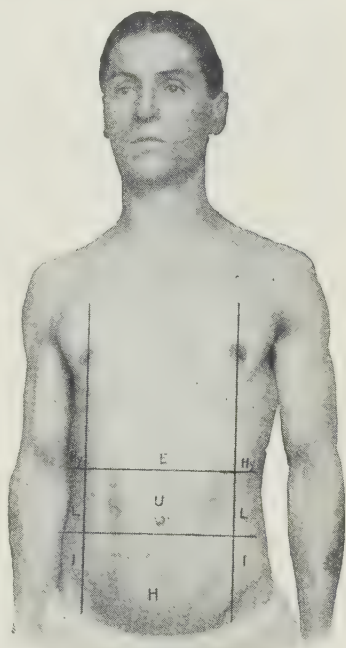
THE PUBLISHERS.

# THE FAMILY ENCYCLOPÆDIA OF MEDICINE

**ABDOMEN, PENDULOUS.** When the abdomen sags downward from any diseased condition, such as excessive fat, a hernia or a tumour, the ordinary corset worn by women makes matters worse. A corset designed to give support should be obtained from a surgical instrument maker. This is put on before the patient gets out of bed, and laced from below upwards.

**ABDOMEN, REGIONS OF.** The abdomen may be divided, for purposes of reference, into nine regions separated by imaginary lines. Two perpendicular lines drawn downwards from the nipples pass through the middle of the ligament that crosses from the middle of the pelvis to the top of the haunch bone. Two horizontal lines cross the body, one just under the ribs, the other between the upper borders of the haunch bones. Thus the abdomen is divided into three regions in the middle, and three at each side. The former are called, from above downwards, the Epigastrium [E], the Umbilical [U], or Navel region, and the Hypogastrium [H].

The latter from above downwards are named the Hypochondriac [Hy] regions, the Lumbar [L] regions or loins, and the Iliac [I] regions or groins.



THE ABDOMINAL REGIONS



**ABDOMINAL PAIN.** Abdominal pain is rarely a reliable symptom on which to build up a diagnosis of abdominal trouble. A quite unimportant colicky twinge may give the patient most excruciating agony; and, on the other hand, advanced peritonitis may be present, or rupture of the intestines after injury, and the patient may feel little pain.

Generally speaking, however, a dull pain on the left side, perhaps extending upwards towards the chest, is often noted in stomach trouble. Pain under the right armpit may mean liver congestion. In the lower right corner of the abdomen pain may denote inflammation of the appendix. General abdominal pain, at first felt all over and later apparently concentrating over the lower right area, especially suggests appendicitis. A twisting griping pain above the navel suggests colic, with a distended large intestine, due to wind resulting from food fermentation.



A DWARF, A GIANT, AND AN ORDINARY  
MAN COMPARED

Sharp, very severe, knife-like pain at the upper right border of the abdomen suggests gall stones; a similar pain darting downwards from the centre of the back towards the pelvis suggests kidney stone. Diagnosis, however, can never be made with any accuracy from the character and the position of abdominal pain.

**Treatment.** Hot applications, poultices, or hot-water bags or ice bags over the seat of the pain sometimes give relief. If a clearing of the bowels with a couple of grains of calomel at night, followed by a heaping teaspoonful of Epsom salts in the morning, does not relieve the pain, no time should be lost in calling in the doctor.

Where there is sudden diarrhœa and griping pains in a grown person, the following mixture often gives relief:

R	Chlorodyne .. .. .	1 drachm
	Spirit of peppermint .. .. .	3 drops
	Compound tincture of rhubarb .. .. .	1 drachm
	Camphor water (concentrated) .. .. .	10 drops
	Distilled water .. .. .	enough to make 3 ounces

Take one teaspoonful in water, and repeat once in four hours' time unless the symptoms improve.

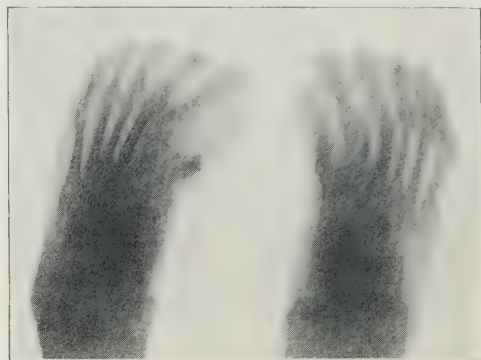
It should be clearly understood that this mixture, like all "stomach ache drops," only aims to quiet the symptoms. The only sensible treatment in abdominal pain—as in all other disorders—is to seek out the cause and to remove it. This accomplished, the pain will pass off by itself.

**ABNORMALITIES** are variations from the natural formation of the body, such as hare-lip, cleft palate, six-fingered hands, etc. Probably no one is free from abnormalities of one kind or another, as in the distribution of nerves or blood-vessels, in the size and location of internal organs, in the thickness of the skull, the arrangement of muscles, etc. To a surgeon when performing an operation, the remembering of this fact is sometimes of great importance.

Not infrequently the same abnormality is found in several generations of a family, as, for example, albinism, a congenital absence of colouring matter in the hair, skin, and iris of the eye, or the abnormality of hæmophilia, or "bleeder's disease."

Constant intermarriage between blood relations is a common cause of abnormalities in succeeding generations. The case of a boy of three in whom the middle toes on each foot were missing, recently described by Mr. Tubby, is an instance of inherited abnormality. In four generations of this family fifteen out of twenty-two showed this foot defect.

Sometimes, without any apparent reason, a tendency to exaggerated or diminished bone-growth amounts to true abnormality, as in the case of giants and dwarfs.



X-RAY PHOTOGRAPH SHOWING SIXTH TOE  
From a photograph in St. Bartholomew's Hospital Museum



CONGENITALLY DEFORMED HANDS

From a photograph in St. Bartholomew's Hospital Museum

result of constriction or pressure on the part during intra-uterine life. An interesting example of both types of abnormality was the famous Turtle Woman of Demerara, described in the "Lancet" some years ago. Although her legs were practically unformed and less than six inches long, each foot bore six toes.

Abnormalities in the form of missing fingers or toes or even whole limbs are more common, as well as more easily accounted for, than those consisting of abnormal additions to the body. Whereas it is impossible to put forth any good reason for the development of a third leg (as has been known to occur), the congenital absence of fingers or even limbs is very possibly the



**ABORTION, OR MISCARRIAGE**, means the expelling of the contents of the womb before the seventh month of pregnancy. After that, should the process take place before the full time of delivery, it is known as premature labour.

Miscarriage is most often met with in women who have not long been married, or those who are approaching the age when menstruation ceases. It occurs more frequently during the earlier months of pregnancy, or at the seventh month, and generally at a time corresponding to that of the "periods," so that special care should be taken at those times.

Miscarriage may be brought about by any violent shock or emotion ; too great exertion, as in lifting heavy weights ; excessive exercise, either by walking too far or too fast, dancing, rowing, riding, a long and fatiguing railway journey, or a bad fall.

Illnesses such as eruptive fevers, inflammatory attacks, etc., are likely to bring on a miscarriage. Other causes may be found in a failure of the general health, whether hereditary or brought about by too great a strain on the system, as in frequent pregnancies, malformation of the pelvis, or diseases of the womb, which may cause the foetus to die and oblige its being cast off.

Diarrhœa and the taking of strong purgatives—especially aloes—severe attacks of vomiting, violent toothache, constipation, and anything likely to cause great irritation and generally upset the system may lead to a miscarriage.

Some women are much more liable to miscarry than others, and when it has occurred there is always fear of a similar accident in future pregnancies, as what is known as the "habit of miscarriage" may be formed. Premature expulsion of the foetus has been known to take place time after time, at exactly the same period of pregnancy. Where it is known this tendency exists, extra care must be taken.

Criminal attempts at abortion are sometimes made, but though some women miscarry all too readily, an abortion is generally a very difficult thing to bring about, and can only be accomplished by highly dangerous and criminal means. Certain drugs are supposed, by many people, to bring about miscarriage or abortion. More often they cause the serious ill-health or even death of the mother, without having in any way upset the contents of the womb.

**Symptoms.** If the miscarriage takes place early in the pregnancy, it may be mistaken for a menstrual discharge, and the foetus will appear only as a clot of blood. The severity of the case increases with the length of the pregnancy. The first signs which show that a miscarriage is threatening are generally feelings of faintness, with weariness and depression. There may be a sensation of weight in the abdomen ; the hands and feet are cold. Frequently recurring pains are felt about the back, loins and hips. This is followed by

bleeding, which may be only slight at first, and then cease, but only to return. This bleeding may be only fluid, or clots may be passed. Should it continue to any great extent and the pains increase, there is little hope that the miscarriage can be averted. The pains will continue until the womb is emptied.

**Treatment.** By taking it in time a miscarriage may often be prevented. If possible, therefore, obtain the help of a doctor speedily.

The woman threatened with this misfortune should go to bed at once in a cool, airy room. She must rest on a firm mattress—a soft bed must not be allowed—with her head raised only slightly. Let the covering on the bed be sufficient to keep her from being chilled, but it must be light in weight, and not sufficient to get her in any way over-heated.

Do not allow much talking in the sick-room. Before all things, keep the patient cool, quiet, and unexcited.

All food must be simple and light—milk, gruel, toast and puddings, etc. Everything must be given nearly cold.

The bowels should be relieved, when necessary, by a moderate dose of castor oil—i.e., two to four teaspoonfuls. If there is much pain, 10 to 20 drops of laudanum in a little water may be given.

Should the bleeding become more severe, try to check it by putting cloths dipped in perfectly cold water on the lower abdomen. Napkins will be found handy for this purpose. Keep the nightdress and bedclothes from becoming wet by putting oil-skin or American cloth over the cloths. Change very frequently, and take care that the water used is as cold as possible. Should these means fail to stop the bleeding, give a vaginal douche of a quart of water as hot as the patient can stand.

All food must now be given perfectly cold, and only in liquid form. It must be administered by a nurse to the patient, who should lie as still and quiet as possible. The bed pan must also be used when necessary, the patient on no account being allowed to rise to pass water or relieve the bowels.

Stimulants should not be given if it is possible to avoid doing so. If the patient seems faint, bathe the forehead with a little eau-de-Cologne, and hold smelling-salts to her nose. Only in the case of the pulse being hardly perceptible may stimulants be administered, and then only a small quantity of brandy or a teaspoonful of sal volatile in a little water. If, in spite of this treatment, the bleeding continues, and the pains increase, it is certain that abortion must take place, and the presence of a medical man is very necessary. Until he comes, let the rules laid down above be closely observed. The patient will pass clots of blood, and these should be saved for the doctor to see, as it is important that he should know if the contents of the womb have been fully expelled. Should any parts of the membranes be retained in the womb, fever and perhaps fatal blood-poisoning may be the result.



After a miscarriage the patient will gradually return to her ordinary state of health, but the loss of blood will have been a great strain on her constitution, and extreme care is needed. A fortnight, at least, must be spent in bed, in order to allow the womb to return to its natural state. Neglect of this precaution may lead to great distress in the future. The patient should for the first few days take only quite a light diet of gruel, milk, beef-tea, etc. After that, fish, fowl, boiled mutton, or anything in that way may be given; but do not allow a heavy meal, as the digestion should not be severely taxed.

When, at the end of a fortnight, the patient begins to get about again, she must on no account over-tax her strength, but make a rule of lying down for half an hour or so at least three times in the day. This is most necessary, as until the womb has quite returned to its normal size, being too long in the erect position may lead to its displacement.

The strength must be built up as much as possible by a light, but nourishing diet of eggs and milk, in addition to freshly cooked meat, except pork and veal. Avoid pastry and all indigestible dishes. Keep the bowels in good order, and sleep in a well-ventilated room.

A tonic such as the following should be taken, and persevered with for some time :

℞	Tincture of perchloride of iron	..	..	..	2 drachms
	Spirit of chloroform	..	..	..	1½ „
	Infusion of quassia	..	..	..	to make up to 8 ounces
	Take two tablespoonsful three times a day after meals.				

Change of air will be found most beneficial, and should, if possible, be indulged in as soon as the patient is able to bear the fatigue of a journey.

To prevent the recurrence of miscarriage the patient should do all that she can to improve her health.

She should keep regular hours, avoid excitement, spend as much time as possible in the open air, take her daily bath of cold or tepid water, followed by a brisk rub down with a coarse towel, sleep in a well-ventilated room, and do all in her power to increase the vigour of her body. She should occupy a separate room from her husband for three or four months after her miscarriage; and should she again become pregnant all sexual relations must cease during the whole of the nine months she is with child. In order to avoid a second miscarriage the expectant mother must observe the rules of health during pregnancy laid down for her guidance very strictly, especially as regards care of the bowels, diet, etc.

Sometimes no other cause except poor circulation and a weak (though not necessarily diseased) heart can be found for a woman's constantly miscarrying in the early months of pregnancy. Tall, slim women who habitually suffer from cold hands and feet are examples of this type. A heart tonic, such as

the mixture prescribed below, by keeping the heart better up to its duty, is frequently the only medicine needed to do away with this tendency.

R	Tincture of digitalis	..	..	..	..	48 minims
	Citrate of iron and ammonium	.	..	..	..	2 drachms
	Spirit of chloroform	..	..	..	..	2 "
	Peppermint water	..	..	..	..	to make 6 ounces
Make into a mixture. Take one tablespoonful in a little water three times a day after meals.						

The prospective mother who has once aborted must be most careful that her daily exercise is not such as to cause over-fatigue, and should rest in the recumbent position for some hours each day. Especial care must be taken at the times which correspond to the periods, as it is then that a miscarriage is most likely to occur. About the time that the misfortune happened in the previous pregnancy, the utmost vigilance must be observed. Very little exercise should now be taken, and all forms of excitement must be carefully avoided.

If any symptom suggesting an impending miscarriage is observed, the doctor should be sent for at once.

**ABSCESS, ACUTE AND CHRONIC.** An abscess may be described as a collection of matter under the skin, caused by the action of micro-organisms. The symptoms of an acute abscess are pain, swelling of the parts, increased heat and redness of the skin. There is usually slight fever. If the abscess is deep in the tissues gentle pressure with the finger over the part may leave a temporary pit or depression in the skin.

**Treatment.** The abscess should be immediately opened by the surgeon, so that all the "matter" may be let out. Pain will immediately lessen, and the burrowing and spreading of the abscess under the skin will cease. If the abscess is not come to a head hot linseed poultices may be applied. After the abscess has been opened, or if it bursts of itself, a strip of antiseptic gauze or lint should be tucked into the opening to keep the passage-way free for the escape of the matter. Over this apply pads of dry antiseptic gauze, and bandage lightly. Change the gauze as often as it becomes soiled, washing the edges of the abscess with a little cotton wool wet with a carbolic acid solution : one part of carbolic acid to forty parts water.

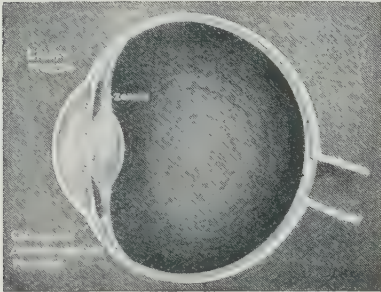
**ABSCESS, CHRONIC.** Here the symptoms are much the same as in acute abscess, but there is less pain and heat. Chronic abscesses are usually the result of tubercular disease, and lead down to diseased bones or joints.

**Treatment.** Everything should be done to build up the patient's general health. Plenty of pure fresh air, sunlight, and plain, nourishing food are essential. A course of an iron tonic, such as Easton's Syrup, one teaspoonful three times a day after meals often aids the system in its fight against the germs which cause the disease. Cod-liver oil, half to one tablespoonful after meals, often gives good results in tubercular cases.



The doctor should be called in immediately the abscess is discovered, for it may be that an operation on the diseased bone, performed in the early stages, is the only means of arresting the disease.

**ABSINTHISM.** The excessive use of absinthe, a growing evil in this country, produces far more serious consequences for the individual than does excessive whisky or beer drinking. Absinthe contains about 60 per cent. of alcohol, and is therefore as strong as "proof" whisky, considerably stronger than the 35 per cent. or 40 per cent. whisky ordinarily sold. Besides the alcohol, it contains tinctures of wormwood, anise, sweet-flag, and marjoram.



HOW ACCOMMODATION IS EFFECTED  
The dotted lines show the shape of the lens  
after accommodation.

Oil of wormwood being a convulsive poison, the continued consumption of absinthe brings on tremors, epileptic fits, paralysis, hallucinations, loss of will power, and sometimes complete insanity.

The victim becomes a physical, mental, and moral wreck.

**Treatment.** The patient must be prevented from drinking the liquor until the poison disappears from his system. At first, his food should consist of milk, broths, and beaten-up eggs. As he improves solid foods may be given. Everything must be done to nourish him and brace up his nervous system. Good food, open-air exercise, and interesting occupation and appropriate tonics all help towards his eventual recovery.

The following bitter tonic is often well borne by these cases :

R

Tincture of nux vomica .. .. .	1 drachm
Spirit of chloroform .. .. .	2 drachms
Infusion of quassia .. .. .	enough to make 12 ounces

Make into a mixture. Take two tablespoonsful three times a day, half an hour before meals.

**ABSORBENT VESSELS.** Another name for the lymphatics. These glands and vessels are supplied to every part of the body. They collect the used-up blood fluid (lymph) from all the tissues and convey it into the veins in the chest, whence it passes to the heart and then to the lungs for aeration.

**ACCOMMODATION** is the process by which the lens of the eye is made more convex or less convex in order to focus near and distant objects on the retina. It may be impaired by changes in the lens itself or by paralysis of the ciliary muscle which effects the accommodation. In the former case suitable glasses should be worn ; in the latter, tonic treatment is called for, and a doctor should be consulted.

Accommodation for near vision is very tiring to young children. Children under eight years old should not therefore be allowed to read small print, to

thread needles, to do fine sewing, or anything that puts a strain on the eyes. These practices are frequently the cause of headache and irritability.

**A. C. E. MIXTURE** is an anæsthetic composed of one part of alcohol, two parts of chloroform, and three parts of ether. It should be made just before use. The defect of this anæsthetic is that the ether, being more volatile, is inhaled first, the denser chloroform being left. (*See ANÆSTHETICS.*)

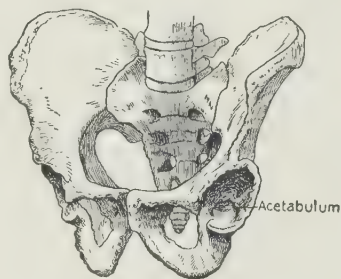
**ACETABULUM** is the socket in the side of the pelvis, or "hip-bone," which holds the head of the thigh-bone, or femur. The bone is held in place not only by the strong fibrous capsule and ligaments, but by the atmospheric pressure on the outer surface of the hip.

**ACETANILIDE**, another name for antifebrin, is a drug derived from coal tar, sometimes used for its power to reduce temperature and to soothe the nervous system. It is an unsatisfactory and even dangerous drug, death having been known to follow most moderate doses. Headache powders containing acetanilide should be avoided. The usual dose for a healthy adult is 3 to 5 grains.

**ACETIC ACID**, the acid present in vinegar. Used internally, it is astringent. It reduces corpulence by deranging the digestion and diminishing the appetite. Obviously it is a dangerous remedy for this complaint, as it produces bodily weakness and anæmia.

Two tablespoonsful of dilute acetic acid in a pint of water forms a useful lotion for sopping on an itching skin; applied to the forehead it sometimes relieves headache. This lotion may also be used to check profuse perspiration, as it leaves a pleasant feeling of coolness.

Strong acetic acid acts as a caustic, and is sometimes used for removing warts.



ACETABULUM, THE HIP-BONE SOCKET

**ACETONE.** A substance sometimes appearing in the urine of sufferers from advanced cancer or diabetes. It is often described as having an odour resembling violets. The presence of acetone in itself requires no special treatment apart from that of the disease in which it occurs.

**ACHONDROPLASIA** is a disease affecting the bones of a child before birth, and causing shortness of the limbs or of the ribs, and also other deformities.

Frequently birth is premature, and the child does not live. When the child does survive he may grow up with legs and arms half the normal length, narrow chest, and small pelvis. His life is not shortened, but there is no remedy for the defect.

The characteristic deformities are the result of a stoppage of growth of



the long bones, the cartilaginous growing ends of which turn into bone at a much earlier age than in normal individuals. The course of the disease is confined to the early months of the child's development within the womb, and does not continue after birth.

While the body may be greatly deformed, the sufferer from achondroplasia may be of normal intelligence, and healthy in other ways. Apart from the pronounced shortening of the arms and legs, there is frequently a marked depression of the bridge of the nose, while the skull appears abnormally large on so stunted a subject.

While the body itself may be of ordinary length the sufferer from achondroplasia may not be more than four feet in height. Frequently in women sufferers from the disease the pelvic bones are so deformed that birth of a full-timed child is impossible. Should such a subject become pregnant it may therefore be necessary, in order to save the mother's life, for the physician to induce an abortion as early as the fourth month.

**ACHORION**, the name of the fungus which causes Favus, or "honeycomb" ringworm.

**ACIDS** are of two classes, organic or vegetable, and inorganic or mineral acids. Of vegetable acids those most commonly used are acetic, carbolic, carbonic, chrysophanic, citric, gallic, hydrocyanic (prussic), lactic, salicylic, tannic, and tartaric. Among mineral acids commonly used are boracic (or boric), chromic, hydrobromic, hydrochloric, phosphoric, sulphuric, and sulphurous.

**Uses.** The strong acids are used as caustics in the treatment of warts, ulcers, poisoned wounds, etc. Some of the diluted acids are useful as disinfectants and in certain forms of dyspepsia. Tannic and gallic acids are employed for their astringent effects to control bleeding and diminish perspiration.

Citric and tartaric acids are often used in cooling beverages in fevers, and have some effect in lowering the temperature.

Each acid is described under its name. See **ACETIC ACID**, **BORACIC ACID**, etc.

**ACID POISONING.** After the accidental taking of any quantity of a poisonous acid, do not give emetics, but as quickly as possible load the patient's stomach with the first alkali handy. Baking-soda or soap are common household alkalies which, hurriedly washed down with large quantities of water, will neutralise most acids in the stomach, and combine with them into harmless salts. After this, white of egg, milk, or olive oil may be given to allay the irritation of the lining membranes of the stomach. The doctor should in every case be sent for immediately, even though the patient seems greatly relieved by the alkali treatment. This regime is, of course, simply a makeshift to be carried out until the doctor's arrival. (See also the special treatment given under the headings of the different poisons.)

**ACIDITY.** In popular language the term describes the blood condition often found in rheumatism, gout, and certain kinds of dyspepsia. It is usually brought on by a diet composed too largely of animal food. The simplest treatment is to cut down the meats, take plenty of lettuces and green vegetables, and drink plenty of fresh water, weak lemonades, and carbonated waters between meals. Where there is acidity of the stomach, with occasional risings of sour, bitter material in the back of the throat, the following mixture, taken from half an hour to an hour after meals, often gives relief:

℞

Bismuth oxycarbonate	..	2 drachms
Sodium bi-carbonate	..	1½ „
Mucilage of tragacanth	..	1 ounce
Peppermint water	..	to make 8 ounces

Take two tablespoonsful half an hour to one hour after a meal, when the symptoms are troublesome.

**ACIDOSIS** is another name for acid auto-intoxication (self-poisoning), which results from the excessive formation of acids in the system. The most important variety is that which results in the formation of acetone, which is discharged in the urine (acetonuria). It occurs in diabetes, sometimes during pregnancy, when it is accompanied by obstinate vomiting, in starvation, dysentery, typhoid fever, scurvy, and after chloroform inhalation.

**Treatment.** Large quantities of bicarbonate of soda (2 to 4 drachms, well diluted, in the twenty-four hours) should be administered. In addition, give a morning draught of citrate of soda, one drachm in eight ounces of warm water. In non-diabetic cases, largely increase the starchy and sugary foods in the patient's dietary. The bowels should be kept active by taking, when necessary, a teaspoonful of Epsom salts in a half glass of water before breakfast. In diabetic cases, when acetone appears in the urine (*see* ACETONE) all fatigue or exposure to chill which might usher in diabetic coma (loss of consciousness) must be carefully avoided.



ACHONDROPLASIA

A permanent shortening of the limbs caused by disease of the bones before birth.



**ACNE, or ACNE VULGARIS**, is a widespread, very chronic skin disease characterised by pimples, blotches, blackheads, and a greasy skin chiefly on the chin, forehead, and shoulders. It is commonest in young people, usually developing about the time of the change from childhood to adult life. The hard pimples with little black dots in their centres are the tiny skin glands which have become choked with secretion which has undergone degeneration. Later, these little red mounds become pustular, and discharge. New crops of pimples and blackheads succeed each other, the affection often persisting for years. As a rule, the disease passes off of itself during the late twenties. After healing, permanent scarring may remain.

While the forehead, cheeks, and chin are the most commonly affected regions, the shoulders and back are quite frequently attacked as well. The disease is much the commonest in people of an oily, muddy complexion, though it is not infrequently found in young people who all through childhood and up to the dawning of adult life have had perfectly clear, smooth complexions.

The first sign of the disease is a number of minute, red, scattered points, or little pimples, which form at the mouths of the sweat glands, or pits, in which the tiny hairs on the skin are embedded. At first there may be only three or four, but as new crops constantly break out there may, in a few weeks, be a dozen or more. Soon the little dark-red or bright-red pimples get larger, and become full of pus, or "matter," and then discharge, leaving a tiny ulcer, which finally heals, leaving perhaps a reddish stain, or, if the ulceration has extended deep into the skin, a permanent scar. [See PLATE.]

Unless the disease is of long standing, with deep-seated ulceration, there is rarely any pain in acne, though the skin may be tender to the touch. The burning and itching which are so common in most skin diseases are usually absent in acne.

**Causes.** Anæmia, a general rundown state of the system, chronic indigestion, neglect of regularity of the bowels, bad teeth, lack of exercise, diseases of the internal organs in women, all conduce to the development of acne. The predominant predisposing cause, however, and in many cases the only cause which can be discovered, is the general upset of the system, and particularly the sudden development of glandular tissues throughout the body which takes place at the change from childhood to adult life.

The active cause is a germ which settles in the skin glands, leading to the pimple formation, blackheads, and muddy, greasy, thickened appearance of the skin which are the common symptoms of the disease.

**Treatment.** Constitutional treatment directed towards building up the general health by correcting any dyspepsia, constipation, or anæmia present is as important as local treatment. Where there is a tendency to flatulence, with a feeling of fullness after meals, with occasional risings of a sour taste in



### A COMMON SKIN TROUBLE : ACNE

For the causes and treatment of this very widespread and annoying skin disease, see the article beginning on page 20.

TO FACE PAGE 20.





the mouth, particular care should be taken to avoid all starchy and sugary foods; and the amount of liquid taken during the twenty-four hours should be reduced to a pint and a half or two pints, and taken only between meals, drinking nothing at all during meals. At the same time, the following mixture may be taken three times a day about an hour after meals:

℞	Bismuth oxycarbonate	..	..	..	..	2 drachms
	Sodium bi-carbonate	..	..	..	..	2 "
	Mucilage of tragacanth	..	..	..	..	1 ounce
	Peppermint water	..	..	..	..	enough to make 6 ounces
Make into a mixture. Take one tablespoonful in a little water about an hour after meals.						

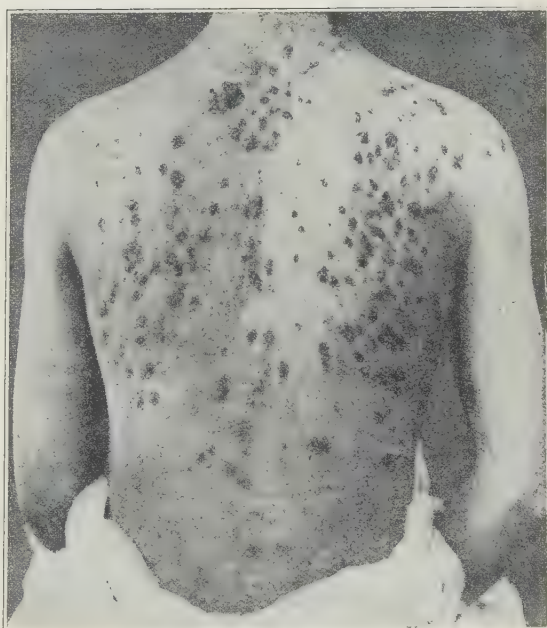
Where there are evidences of intestinal indigestion (such as the constant passing of wind and foul-smelling stools) an intestinal antiseptic such as the following mixture may prove of use:

℞	Salol	..	..	..	..	48 grains
	Mucilage of tragacanth	..	..	..	..	6 drachms
	Water	..	..	..	..	to make 6 ounces
Make into a mixture. Take two tablespoonsful three times a day after meals.						

Where the pimples tend to become full of matter, quarter-grain doses of sulphide of calcium taken four times a day often have a drying-up effect on the spots. The diet should be of the plainest. Simple, easily-digested food, with plenty of green vegetables and salads, should be taken; but greasy meats and fatty foods in general should be avoided. Pastry, sweets, pickles salt meats, beer, ale, stout, and sweet wines are also forbidden.

The patient should, of course, do everything to improve his general health by getting plenty of sleep, sufficient outdoor exercise, etc. A cold bath every morning (if the patient's circulation will stand it) often has a very useful tonic effect on the skin. If cold baths disagree, a hot bath should be taken every morning, followed by a cold sponge and a good rub down.

For the anæmia and constipation so frequently



SEVERE ACNE OF THE BACK

noted in acne, the following prescription is recommended :

R					
	Sulphate of iron	..	..	..	16 grains
	Sulphate of magnesium	..	..	..	1 ounce
	Dilute sulphuric acid	..	..	..	1 teaspoonful
	Peppermint water	..	..	enough to make	4 ounces

Take a tablespoonful in a wine-glass of water half an hour before breakfast.

**Local Treatment.** Wash the parts affected thoroughly every night and morning with a piece of rough flannel, any pure sulphur soap, and plenty of warm water. After this, mop the parts for five minutes with water as hot as can be borne. Then press out with the fingers (or a comedo-extractor, which any chemist can supply) a few of the larger blackheads. At bedtime apply the following lotion, and allow it to dry and remain on all night :

R					
	Precipitated sulphur	..	..	..	1 part
	Rose water	..	..	..	24 parts
	Calcium water	..	..	..	24 "

Sop on with a little cotton wool.

When, as very frequently happens, the skin is of an oily, greasy, thickish texture, the following lotion gives excellent results :

R					
	Precipitated sulphur	..	..	..	1 drachm
	Ether	..	..	..	4 drachms
	Rectified spirits of wine	..	..	..	3½ ounces

Make into a lotion and sop on several times a day. (Schamberg.)



A COMEDO EXTRACTOR

Another preparation recommended by the same authority as "one of the most eligible and efficient lotions known" in acne vulgaris is the compound zinc sulphide lotion :

R					
	Sulphate of zinc	..	..	..	1 drachm
	Potassium sulphide	..	..	..	1 "
	Rose water	..	..	enough to make	4 ounces

Dissolve the ingredients separately, then heat them and mix them.

A double decomposition takes place with the precipitation of a whitish powder. The potassium sulphide must always be fresh.

This lotion may be sopped on the acne spots four or five times a day, and has the advantage that it may be employed upon the face without disfigurement. As with the other lotions mentioned, this application will be found particularly suitable where the disease is chiefly in the outer layers of the skin—that is, not deep-seated and where the face is oily.

A useful sulphur preparation in ointment form is the following :

R					
	Precipitated sulphur	..	..	..	1 teaspoonful
	Starch	..	..	..	2 teaspoonful
	Powdered zinc oxide	..	..	..	2 "
	Petrolatum	..	..	..	4 "

Mix well into a smooth ointment and apply to the spots at night

Sometimes, despite prolonged treatment with sulphur compounds, the disease obstinately persists. The mercury compounds may then be tried. Leave off all treatment for a full week (to get all the sulphur off the face), washing simply with soap and water three times a day. Then every night lather the face well with perchloride of mercury soap (which your chemist can give you), and let this dry on the face. During the daytime a little of the following ointment may be applied:

℞  
Ammoniated mercury    ..    30 grains  
Zinc oxide ointment    ..    1 ounce  
Mix into ointment and apply to spots.

If the pimples break and exude matter, bathe them several times a day with a warm carbohc acid solution, one part of the acid to forty parts of water. Treatment must be carried out conscientiously for weeks, or even months, before a cure can be expected.

Acne vulgaris sometimes responds well to vaccine treatment. This consists of injecting under the skin a vaccine prepared from the same variety of germs which cause the acne. It can only be carried out by a specialist in vaccine treatments.

In very chronic cases with much scarring, X-rays may give good results.

**ACNE ROSACEA.** The prominent symptom here is a chronically inflamed, reddened state of the skin over the nose. Many enlarged blood-vessels may also be apparent. The rest of the skin on the cheeks, forehead, and chin may be affected or may remain normal in texture.

The disease is commoner in women than in men, and is usually due to dyspepsia, poor circulation, or over-indulgence in alcohol. In early cases the redness and itching of the nose comes on only after meals or after drinking hot beverages, or on exposure to cold and heat. After a while the redness becomes permanent, the colour being due to the tiny skin-vessels of the parts becoming swollen and enlarged. About this time pimples, similar to those in acne vulgaris, may develop, and the whole nose may enlarge, becoming bulbous or lumpy. Excessive tea drinking is as common a cause of acne rosacea in women as is the abuse of alcohol in men.

**Treatment.** Any disorder of the stomach, liver, or bowels should first be put right. Then the diet should be carefully gone over, and everything which tends to cause flushing of the face forbidden. Alcoholic beverages of



SCARS LEFT BY ACNE



all kinds should be given up, and coffee and tea should be cut down to a minimum.

Internally ichthyol sometimes brings about marked improvement after even a few days' administration (Sir Malcolm Morris). Five grains of ichthyol in capsules or tabloids may be taken on an empty stomach early in the morning and late at night. After a few days the dose is increased to  $7\frac{1}{2}$  grains, and a few days later to 10 grains or more. This treatment frequently is found to regulate the bowels, improve the digestion, and prevent the tendency to flatulence and flushing of the face.

If, as is not infrequently the case, the general circulation is faulty, a stimulating tonic such as the following sometimes greatly benefits:

℞  
Strychnine phosphate  $\frac{1}{4}$  grain  
Iron phosphate .. 1 grain  
Quinine sulphate .. 1 grain

To make one pill. Make 24 pills.  
Take one pill three times a day after meals.

The bowels must be regulated, and any indigestion or anæmia treated. The sulphur preparations advised above for acne vulgaris may be used with advantage when there are pimples and blotches present. To hide the redness of the nose the following liquid powder may be used.

℞  
Pure oxide of zinc .. .. . 1 ounce  
Glycerine .. .. . 1 drachm  
Rose water .. .. . 8 drachms

Shake well and apply with a damp sponge, allowing the powder to dry on.

There are no local applications which can be relied upon to remove permanently the disfiguring redness of the nose. In very advanced cases the surgeon may be able to improve the patient's appearance by cutting away part of the overgrown nose tissues. The patient should avoid washing the face in very hot or very cold water and when coming in from out of doors in winter should never sit close to the fire until the skin has lost its initial chill.



ACNE ROSACEA NOSE

The bulbous nose seen in the advanced stage.

A dry powder useful in acne rosacea is the following :

R

Boric acid (very fine)	..	..	..	..	1 part
Zinc sulphate (finely powdered)	..	..	..	..	1 "
French chalk	..	..	..	..	20 parts
Jasmin oil	..	..	..	..	A drop or two

Mix the perfume into the boric acid powder, rubbing well, and then add the scented boric acid to the other ingredients. Rub through a fine sieve. Use as face powder.

**ACONITE** is a powerful poison sometimes prescribed in medicine to slow the action of the heart. The symptoms of overdosage are severe vomiting, an icy wet skin, complete prostration, and a very slow, often irregular pulse. All that can be done in the way of home treatment in aconite poisoning is to keep the patient warm with blankets and hot water-bottles until the doctor comes, and to stimulate the heart's action by giving him strong, hot coffee.

**Aconite Root**, like all parts of the aconite plant, monk's hood, is extremely poisonous. It resembles horseradish, and may be mistaken for it with fatal consequences. They may, however, be easily distinguished. Horseradish is about a foot long, or more. Aconite root is usually from two to four inches. Horseradish is a pure yellowish colour outside, whitish inside; aconite is a dark brown colour outside, whitish inside.

Horseradish is cylindrical in shape, aconite is not cylindrical. When a piece of aconite is chewed it causes tingling and numbness of the tongue.

The principal active principle of aconite is aconitine. From this and from the root are made the three preparations in general use—namely, aconitine ointment, liniment of aconite, and tincture of aconite.

Aconite sometimes relieves pain. It slows and steadies the heart in moderate doses, but makes it wildly irregular in large doses. It reduces the temperature in fever, increases perspiration, and slightly increases the action of the kidneys.



ACNE ROSACEA

Excessive tea-drinking is a common cause of this complaint in women

Externally the ointment is sometimes used to relieve neuralgia. A piece the size of a small pea is rubbed in until the skin becomes numb. Instead of the expensive ointment the cheaper liniment of aconite may be used, a little being painted over the painful part with a camel-hair brush. The liniment is useful for relieving the pain of sprains, bruises, and chronic rheumatism. In these cases the compound aconite liniment (composed of aconite, belladonna, and chloroform) may give good results when the simple liniment fails.

Aconite is readily absorbed in poisonous amounts from a wounded surface. None of these preparations, therefore, should be used when the skin is broken.

Internally the tincture is given in doses of five to fifteen minims. Sometimes small, frequently repeated doses of two to five minims are given. This is a favourite popular remedy, and sometimes acts well in colds, laryngitis, tonsilitis, feverish attacks in children, etc. But as aconite is one of the



THE ACONITE PLANT : FLOWER, LEAF, AND ROOT FIBRES

Hinkins

deadliest poisons known, the tincture should never be used without medical advice. It is useful sometimes in neuralgia.

**ACROMEGALY** is a rare disease, characterised by marked enlargement of the bones of the hands, feet, and lower jaw.

The disease is commonest in young or middle-aged women, though men are sometimes attacked. Cases have been recorded as early as in the fifteenth year.

The cause, according to different authorities, may be an enlargement or atrophy of the thyroid gland in the neck, an enlargement of the thymus gland, or a tumour of the pituitary body, a small gland situated at the base of the brain. By some authorities acromegaly is considered to have some relation-ship to osteitis deformans, a variety of chronic rheumatism.

The disease is extremely chronic, making its appearance gradually, and persisting for many years. Sometimes, for no apparent reason, the ailment.



after having progressed steadily for years, is suddenly arrested. It is rarely fatal in itself, though its victims seldom reach an old age and are carried off in middle life by heart, lung, or kidney troubles.

On account of the abnormal growth of the lower jaw-bone, the lower teeth in an advanced case, spread out and protrude in front of the upper teeth in a characteristic manner. Sometimes the bones of the upper jaw and the skull take part in the enlargement, giving the head a massive, giant-like appearance.

The hands and feet, besides growing in length, usually become wider and thicker, until the fingers in advanced cases may resemble sausages. In the late stages the bones of the fore-arm and leg may become enlarged, while the soft parts also undergo thickening. Not infrequently the patient's spine becomes considerably bent as the disease progresses, so that he appears to have shrunk in stature.

In addition to the lengthening and massive development of the chin, the nose frequently enlarges, and the eyebrows become more prominent. Sometimes the cartilages composing the larynx become thickened and enlarged, the result being a pronounced deepening in the tone of the sufferer's voice. Coarsening of the skin of the face, enlargement of the tongue, headache, pains in the limbs, profuse perspiration, and constant thirst are other very common symptoms.

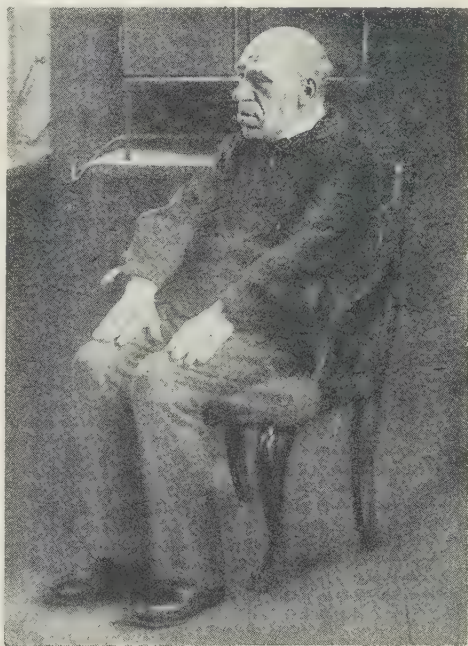
The patient loses muscular strength, his sight may grow weak, and actual blindness may even occur from degeneration of the optic nerves.

Throughout these changes, although the growth in the face tissues frequently gives the patient a dull, stupid, animal look, the intellect remains almost entirely unaffected.

There is no known treatment which has the slightest influence on the course of the disease.

**ACROMION PROCESS** is the part of the shoulder-blade which forms the tip of the shoulder.

The acromion process limits the upward movement of the arm. Because of its being in the way the arm cannot be raised vertically upwards against the side of the head without its first being rotated outwards so that the upper arm-bone slips by the acromion process.



**A CASE OF ACROMEGALY**

Photographed at St. Bartholomew's Hospital. Note the lengthened and enlarged hands and the massive development of the chin, nose and forehead.

**ACTINOMYCOSIS** is an infectious disease, the result of the tissues being invaded by a micro-organism called the actinomyces or ray fungus. The disease is most frequent in cattle and pigs, causing a gradual swelling and chronic ulceration of the jaw bones. Among human beings it is much more common in men than in women, probably because the former have more to do with cattle.

While the manner of spread of the disease is not accurately known, the most likely theory is that the ray fungus is taken into the mouth, both in the case of cattle and men, from food. Actinomycosis usually first shows itself as a small, slowly growing swelling on the jaw, which after a time breaks down with discharge of matter containing the characteristic ray fungus, the cause of the disease.

Instead of attacking the jaw bones, the fungus sometimes invades the tongue, the liver, the intestines, or the lungs.

When the lungs are the seat of the disease the chief symptoms are fever, cough, rapid loss of flesh, and the spitting up of a yellowish foul-smelling expectoration. Sometimes the disease resembles chronic bronchitis; in other cases it can only be differentiated from tuberculosis of the lungs (consumption) by the presence of the ray fungus in the expectoration instead of the tubercle bacilli.

When the lungs are attacked, the outlook is always very grave, death usually occurring within the year.

In rare instances, the ray fungus may centre in the skin, setting up a chronic ulceration, or in the brain, with formation of an abscess which nearly always proves rapidly fatal.

Diagnosis can only be made from the discovery of the ray fungus in the discharge or expectoration.

As it is known that the ray fungus occasionally grows on various common grains, including barley, the common habit of chewing raw grain or straws must be considered a dangerous one. As the inhaling of dust in threshing, winnowing, and chaff-cutting is a very probable source of infection (W. S. Greenfield), the wearing of a respirator when at this work is a useful preventive measure.

**Treatment** is both medical and operative. The most useful drug is iodide of potassium in large doses. The following prescription may be useful here :

R

Potassium iodide .. .. .	$\frac{1}{2}$ ounce
Ammonium carbonate .. .. .	1 drachm
Infusion of quassia .. .. .	enough to make 8 ounces

Take one tablespoonful in a wineglass of water three times a day after meals.

After this eight ounces of medicine, the prescription may be renewed, increasing the dose by substituting three-quarters of an ounce of potassium iodide for the half-ounce in the original prescription. When this is used up,

at the end of another five days, a full ounce of the iodide of potassium may be substituted for the three-quarters of an ounce previously prescribed.

In addition to the iodide treatment (which should, of course, be temporarily interrupted should symptoms of iodism, *i.e.*, headache, running at the nose or eyes, irritation of the gums, skin eruptions, etc., arise), an operation for removing any dead and ulcerated bone is frequently required. After cutting down on to the site of the bone-abscess and removing any dead bone, the abscess cavity should be swabbed out with a one to two-thousand solution of perchloride of mercury.

As the disease always has a markedly depressent effect on the patient's general health, and sometimes leads to pronounced anæmia, iron may often be added to the potassium iodide mixture with advantage, as below.



ACTINOMYCOSIS OF THE JAW: BEFORE AND AFTER IODIDE TREATMENT

From drawings made at St. Bartholomew's Hospital of a case treated there.

R

Potassium iodide	..	..	..	..	..	..	½ ounce
Potassium bi-carbonate	..	..	..	..	..	..	½ „
Iron and ammonium citrate	..	..	..	..	..	..	1½ drachms
Chloroform water	..	..	..	..	..	to make	8 ounces

Take one tablespoonful in a wineglass of water three times a day,  
after meals.

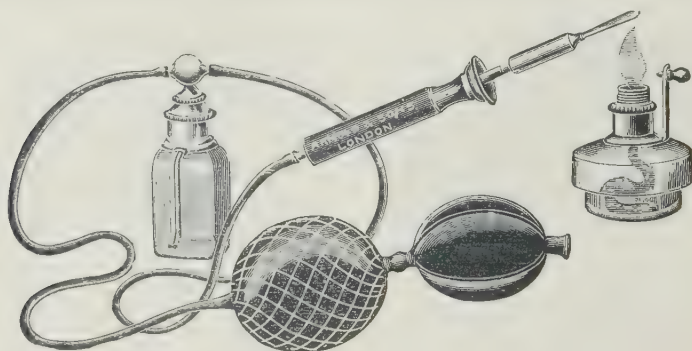
Whereas recovery from the actinomycosis of the lungs, brain, or liver is very rare, the outlook is good in those cases where the bones are chiefly involved. Under appropriate medical and surgical treatment a recovery can usually be looked forward to eventually, though the ailment always runs a very chronic and tedious course.



**ACTUAL CAUTERY.** The application of a heated metal for the purpose of blistering, stopping bleeding from a vessel, removing small growths, etc. The instruments used are a cautery iron, made red hot, a platinum point heated by electricity (galvano-cautery), and a hollow metal point heated and kept hot by blowing benzine into it (Paquelin's cautery).

**ACUPUNCTURE** is the insertion of long needles, sometimes employed for the relief of sciatica or the reduction of an aneurism. For sciatica two to four needles, which have been disinfected by boiling, are pushed through the thigh into the sciatic nerve, and left there for twenty minutes or half an hour. The needles should be about two inches apart.

They cause little pain, and sometimes relieve the sciatica. In the case of aneurism, fine needles are sometimes inserted and left for four to five days, the object being to promote coagulation of the blood (clotting). (*See ANEURISM*).



PAQUELIN'S THERMO CAUTERY USED IN ACTUAL CAUTERY

**ACUTE DISEASES** are those maladies which come on, reach their greatest height and subside (or end fatally) within a comparatively brief period. Chronic diseases are usually not so severe as acute illnesses, but they persist for a long time, or throughout life. Examples of acute diseases are typhoid fever, influenza, pneumonia, measles, scarlatina; of chronic diseases gout, valvular heart disease, chronic bronchitis. The term acute is also used to signify severity, as acute pain.

**ADAM'S APPLE** is the prominence in the front of the neck, caused by the largest of the cartilages which enclose the larynx.

**ADDISON'S DISEASE.** A gradual browning of the skin all over the body, of which growing weakness and stomach upsets are the chief symptoms. The disease is caused by the degeneration of the small supra-renal glands situated just above the kidneys. Little can be done in the way of home treatment further than keeping to a light diet with plenty of milk and milk puddings, etc., and bland drinks such as barley water, lemonade, and soda water.

In advanced cases where there is much weakness, the patient should be confined to his bed, as sudden death from heart failure may follow the slightest exertion. Supra renal extract, arsenic, strychnia, and iron often ameliorate

the symptoms when skilfully prescribed. A physician, of course, alone can treat this little-understood disease with any hope of success.

During treatment the patient should lead a quiet, worry-free life, getting daily moderate exercise if his condition will permit, and spending much of his time out of doors in sunny weather.

**ADENOIDS** are small, abnormal, heaped-up growths of lymphoid tissue which are often found in children, growing at the back of the nose on the vault of the naso-pharynx (see diagram page 32). From their position they more or less block up the air passage between the nose and throat, making it difficult or impossible to breathe through the nose. Again they may obstruct the opening of the Eustachian tubes, which lead from the throat to the ears, and thus cause deafness and perhaps earache.

Adenoids may be noticed shortly after birth, but are most common between the ages of four and ten. As the change from childhood to adult life approaches, these abnormal over-growths of lymphatic tissue tend gradually to decrease in size. Adenoids are rarely

met with in grown people, though the effects of their presence during the years of childhood are frequently very pronounced and permanently disfiguring.

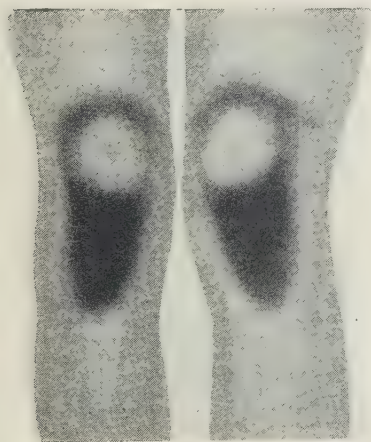
Jewish children are stated to be more likely to develop adenoids than are Gentiles. Negroes, on the other hand, are comparatively immune. People of cold, damp countries are much more subject to adenoids than those who live in warm, southerly latitudes. Any condition which predisposes to a feeble constitution, such as congenital syphilis, ricketts, or tuberculosis, predisposes to the development of adenoids.

**Symptoms.** In infancy, because the blocking up of the nostrils causes difficulty

in breathing, convulsions, vomiting, and child-crowing may be the early symptoms. Somewhat later, by the fourth or fifth year, the face begins to assume the expression which is typical of adenoids. The teeth project, and may overlap, the mouth is constantly open, the chin is receding, and the nostrils



A CASE OF ADDISON'S DISEASE  
Showing the typical darkening (browning, of the skin which spreads all over the body  
From St. Bartholomew's Hospital Museum.



ADDISON'S DISEASE ON THE KNEES  
Showing the deep pigmentation. From a drawing made at St. Bartholomew's Hospital.

instead of being of a normal size, are frequently mere slits. Certain of the face muscles which normally help to pull open the nostrils at each breath through the nose are now rarely or never used, since the child with adenoids *breathes almost entirely through the mouth*. As a result of this disuse, these muscles waste, giving the upper part of the face a dull, characterless look. Very frequently to these characteristic signs there is added a constant discharge from the nose.

On account of the chronic stopping up of the nostrils, the child puffs and blows on the slightest exertion, sleeps more or less badly, and is very apt to snore loudly.

**Complications.** The commonest of these are ear troubles. Practically half of the sufferers from adenoids are more or less deaf, or give a history of abscesses in the ear, earache, or discharge from the ear.

In long-continued cases, swelling of the neck-glands, chronic cough, symptoms of indigestion, and a generally run-down condition may develop. Nervous symptoms such as twitchings in sleep, restlessness, stuttering, convulsions, child-crowing, and bed-wetting are common. The child generally is sickly in body and backward in mental development. Through difficulty in getting enough air into the lungs the chest walls become flattened and narrowed; in other cases a typical "pigeon-breast" may develop. In infancy adenoids are not infrequently associated with rickets.



SECTION SHOWING SITUATION AND GROWTH OF ADENOIDS

The adenoids are marked with an asterisk (\*).



THE RESULTS OF MOUTH-BREATHING

An example of the permanent disfigurement left by adenoids neglected in childhood. The consequent mouth-breathing has robbed the face of expression, protruded the lower jaw, and caused the teeth to project and overlap.

Not only does the child with adenoids look dull and stupid, but very frequently he really is so. Peevishness, irritability, listlessness, and inability to concentrate the mind are common





1  
Pleurisy, Bronchitis, Neuralgia, Injury to Chest, Pericarditis, Herpes, Constipation with Flatulence, Tuberculosis, Tumour of the Chest, Anæmia.



2  
Peritonitis, Inflammation in Intestines, Diarrhea, Dysentery, Typhoid Fever, Lead-Poisoning, Worms, Tuberculosis, Impaction of Bowels, Neuralgia, Floating Kidney, Influenza, Pott's Disease, Scurvy, Rickets.



3  
Beginning of Appendicitis, Constipation, Gall-Stones, Ulcer of Stomach, Wind in Stomach, Heartburn, Ulcer of Duodenum, Disease of Pancreas, Uræmia, Addison's Disease.



4  
Bronchitis, Gas in the Stomach, Bone Disease, Disease of the Centre of the Chest.



5  
Angina Pectoris, Pleurisy, Tuberculosis, Neuralgia, Anæsthesia.



6  
Pleurisy, Pneumonia, Diseases of the Stomach, Pancreas, and Liver.



7  
Bubo, Constipation, Hernia, Renal Colic, Diseases of Testicles and Prostate.

# 1. WHAT PAIN IN THE ABDOMEN AND CHEST MAY MEAN (A)

The dark patches indicate the area where pain may be felt. The diseases in which pain in the particular spot is typical are listed at the side under the number of each pain area.



- 1 Valvular Disease of the Heart, Dilated Heart, Aneurism, Stomach Pain, Acute Poisoning, Dyspepsia, Gout, Hysteria.
- 2 Hip-Joint Disease, Tuberculous Joint.
- 3 Angina Pectoris, Neuralgia
- 4 Disease of the Spleen, Renal Colic, Gastritis, Colitis.
- 5 Bubo, Renal Colic, Hernia, Prostatic Disease.
- 6 Bubo, Hernia, Phlebitis, Neuralgia.



- 7 Bronchitis, Pneumonia.
- 8 Gall-Stone (Colic), Disease of Gall-Bladder.
- 9 Intussusception, Constipation.
- 10 Beginning of Appendicitis, Rupture, Gall-Stones, Peritonitis, Disease of Spinal Bones, Ulcer of Stomach.
- 11 Appendicitis, Constipation.
- 12 Vulvulus, Constipation.
- 13 Indigestion (Wind), Gastric Disease, Bronchitis, Asthma, Influenza, Pseudo-Angina, True Angina, Aneurism, Tumour of the Centre of the Chest, Tabes. In WOMEN: Vomiting of Pregnancy.
- 14 Stomach Dilatation (Wind). In WOMEN: Uterine Disease, Pregnancy, Menstruation, Ovarian Disease, Neuralgia, Diseases of the Breast.
- 15 Kidney-stone passing (Colic), Dysentery, Hernia, Varicocele, Bubo, Muscular Strain (Skating, Horseback Riding).

## 2. WHAT PAIN IN THE ABDOMEN AND CHEST MAY MEAN (B)

The dark patches indicate the area where pain may be felt. The diseases in which pain in the particular spot is typical are listed at the side under the number of each pain area.



1  
Cerebro-spinal Meningitis, Cerebellar Tumours, Constipation Neuralgia, Anæmia, Syphilis, Bad Teeth, Masturbation, Ear Diseases.

2  
Disease of the Spleen.

3  
Hip-Joint Disease, Neuralgia. In WOMEN : Ovarian Disease.

4  
Bronchitis, Diseases of the Stomach.

5  
Diseases of the Liver and Gall-Bladder.



6  
Constipation, Lumbago, Diseases of the Colon.

7  
Diseases of the Prostate, and, in WOMEN, of the Uterus.

8  
Colic from passing Kidney-Stone, Abscess about Kidney, Neuralgia, Muscle pain after Rowing.

9  
Pelvic Disease, Sciatica, Constipation, Prostatic Disease, Ulcer or Cancer of Rectum, Locomotor Ataxia.

10  
Muscular Cramp, Locomotor Ataxia, Gout, Alcohol, Varicose Veins, Diabetes, Chronic Bright's Disease, Neuritis, Lead-Poisoning, Influenza, Trichinosis.

11  
Flatfoot, Overstrain (Tennis, Golf, etc.), Neuralgia.

12  
Gout, Neurasthenia. In WOMEN : Ovarian Disease

ALONG THE SPINE : Hysteria, Tumour of centre of the Chest, Spinal Cord Disease, Neurasthenia, Acute Infectious Diseases.

### 3. WHAT PAIN IN THE BACK, LOINS, AND LEG MAY MEAN

The dark patches indicate the area where pain may be felt. The diseases in which pain in the particular spot is typical are listed at the side under the number of each pain area.



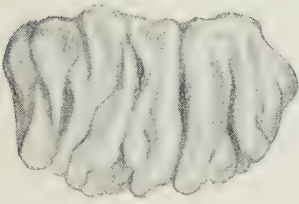


- 1 Cerebrospinal Meningitis, Tumour of Cerebellum, Neurasthenia, Hysteria, Constipation, Neuralgia, Anæmia, Syphilis, Bad Teeth, Masturbation, Ear Diseases.
- 2 Pleurisy, Muscular Fatigue, Pericarditis.
- 3 Wind in the Stomach, Spinal Cord Disease, Ulcer of Stomach, Bronchitis, Gastritis, Neuralgia.
- 4 Inflammation of Spleen.
- 5 Constipation, Spinal Cord Disease, Cystitis, Ulcer of Stomach. In WOMEN: Uterine Disorders.
- 6 Lumbago, Constipation, Floating Kidney, Kidney Stone, Acute Infectious Diseases (Tonsillitis, Smallpox, Influenza, &c.). In WOMEN: Dysmenorrhœa, Uterine Displacements.
- 7 Disease of Testicles, Prostatitis, Piles, Hip Disease, Neuralgia, Sciatica, Ulcer or Disease of Rectum. In WOMEN: Diseases of Uterus and Ovaries.
- 8 Anal Disease, Worms, Hemorrhoids, Fistula, Abscess, Prostate Disease, Constipation, Neuralgia, Cœcix Disease. In WOMEN: Uterine Disease.
- 9 Heart Diseases (Angina Pectoris), Diseases of Liver, Gall Stone Colic, Anæmisms.
- 10 Anæmia, Neurasthenia, Epilepsy, Hysteria, Constipation. In WOMEN: Uterine Diseases.
- 11 Sick Headache, Eye Strain, Constipation, Trigeminal Neuralgia, Ear Diseases.
- 12 Migraine, Eye Strain, Neurasthenia, Hysteria, Drug-Poisoning (Opium, Alcohol).
- 13 Neuralgia, Toothache, Disease of Antrum, Cancer of Jaw.
- 14 Bad Teeth, Neuralgia, Mumps, Actinomycosis, Stoppage of Salivary Glands.
- 15 Neuralgia, Mastoiditis, Ear Diseases, Mumps, Toothache.
- 16 In WOMEN: Diseases of the Uterus and Ovaries.
- 17 Neurasthenia, Constipation, Neuralgia, Depression.
- 18 Tonsillitis, Sore Throat (Diphtheria, Scarlet Fever), Laryngitis, Tuberculous Glands.
- 19 Tuberculous Glands, Spinal Bone Diseases, Muscular Strains, Tics, Anæmisms of Arteries, Tuberculosis of Apex of Lung.
- 20 Neurasthenia, Anæmia, Hysteria, Epilepsy, Disease of Bladder, Alcoholism.
- 21 Migraine, Neuralgia, Eye Strain, Bad Teeth.
- 22 Constipation, Neurasthenia, Alcoholism.
- 23 Cold in the Head.
- 24 Gastric Disease, Eye Disease, Cold in the Head.
- 25 Cold in the Head, Eye Strain.

#### 4. WHAT PAIN IN THE BACK MAY MEAN

#### 5. WHAT PAIN IN THE HEAD MAY MEAN

The dark patches indicate the area where pain may be felt. The diseases in which pain in the particular spot is typical are listed at the side under the number of each pain area.



LIFE-SIZE DRAWING OF AN  
ADENOID GROWTH

symptoms. The adenoid child is usually backward at school, both from his mental dulness and from the slight deafness that is usually present.

If the disease is adequately treated (that is, if the adenoids are removed) in its moderately early stages during the patient's youth, he will, in all probability, entirely outgrow all the physical defects depending directly upon it.

On the other hand, if the ailment is allowed to persist until it gradually subsides of itself at the approach of adult life, the patient will almost certainly carry marked signs of it to his grave.

The chief of these abnormalities are the constantly open mouth, the narrow, thin nostrils, the loose, protruding lower lip, the irregular and frequently overlapping front teeth, the under-developed chest, a harsh, unnatural voice, and defective hearing or other ear troubles. The patient who has "outgrown" adenoids, although he may learn to breathe through his nose when awake, usually sleeps with his mouth open and snores loudly.

**Diagnosis** in a typical case is usually unmistakable from the dull, heavy appearance of the child, the mouth-breathing, the slight deafness, the chronic discharge from the nose, and the distorted teeth. If there is still any doubt, diagnosis can be made certain by the observer passing his finger along the side of the tongue to behind the soft palate, and then turning the tip upwards, exploring the posterior entrance to the nostrils. The feel of adenoids to the exploring finger has often been likened to that of "touching a bunch of earthworms."

While the appearance of the child in the typical advanced case of adenoids renders diagnosis unmistakable, it should not be forgotten that in a small



#### OTHER EFFECTS OF ADENOIDS

Although this child has not acquired the habit of mouth breathing, her efforts to draw sufficient air through her nose have flattened her chest pronouncedly and rounded her shoulders.

percentage of cases there are no abnormalities of expression or change in the shape of the face to warn the mother of the trouble. Repeated attacks of earache, enlarged glands in the neck, frequent feverish attacks, a marked tendency to catch cold, night terrors, or the habit of wetting the bed at night, should suggest the possibility of adenoids and lead to the physician making an examination for them, even though the child may have a normal bright and intelligent look, well-developed nostrils, and be in the habit of breathing chiefly through its nose.

**Treatment.** The only treatment of any avail is to have the adenoids removed by operation. Sometimes it is urged that as the adenoids will probably "go away of themselves" around fifteen or sixteen years of age, they might as well be left alone until then. The fault of this argument is that before this time is reached permanent damage may have been done to the appearance, voice, hearing, nervous and mental character, and physique of the patient, while the most important educational years of his life have been passed in ill-health, and possibly unmerited neglect and reproach. (St. Clair Thomson.)

Operation should be performed when the adenoids can be felt with the finger, and any of the following symptoms are present. (St. Clair Thomson.)

(1) Mouth-breathing in the day; (2) frequent mouth-breathing at night, or noisy or restless sleep with symptoms of obstructed breathing; (3) night terrors; (4) chronic catarrh, with discharge of mucus and matter; (5) frequent cold-catching; (6) any catarrhal affection of the ear; (7) spasmodic cough; (8) enlarged glands in the neck; (9) threatening malformation of the chest or hard palate; (10) headache and other nervous symptoms apparently due to the adenoids.



ADENOIDS: BEFORE OPERATION

A child of 8 years old the typical effects of advanced adenoids

The results of the operation are practically always most satisfactory. Within a few weeks after the operation the listless, dull-looking, stupid child begins to acquire the wide awake look of healthful intelligence. The nervous symptoms, mouth-breathing, etc., pass off, and the child seems to take up a new lease of life. Unless the condition has been allowed to become too chronic, the characteristic shortening of the upper lip, overlapping of the teeth, drooping of the lower lip, and pinched look about the nose gradually become less noticeable.



The operation consists of anaesthetising the patient, and then removing the adenoids by tearing or cutting them from their point of attachment with a special instrument introduced through the mouth.

After the operation, which lasts but a minute or two, the patient should be kept in bed for twenty-four hours. During this time he may be given ice to suck, or iced fluids of any kind, but nothing solid. The child may usually be allowed up on the second day, and may be given gruels, milk puddings, custards, junkets, etc. On the third day he may return to his regular diet. Plenty of fresh air, with wide-open windows in the bedroom, should be the rule during convalescence. In ten days to a fortnight the wound should be completely healed.

After complete recovery from the operation the patient's health should be built up in every way possible by plenty of outdoor exercise, plain, nourishing food, long hours of sleep, and freedom from all school and other restrictions. A month at the seaside or in the country will often work wonders in these cases.

The child must be instructed to keep its mouth constantly closed and to practise breathing through the nose when awake, and it will soon acquire the habit of so doing when asleep. To complete the return to health, the following tonic mixture may be taken for three or four weeks:

R

Iron and ammonium citrate ..	..	1 drachm
Cod liver oil emulsion (B.P.C.) ..	..	8 ounces

Dissolve the iron in sufficient water and mix. Dose, one-half to one tablespoonful three times a day after meals.

It should be realised that, no matter how successful the operation has been, new adenoids may develop if the after-cure, particularly the practising of the habit of breathing through the nose, is not sedulously carried out. Again, the general unsanitary conditions, the lack of ventilation, the stinting of outdoor exercise or play, etc., which encouraged the growth of the original crop of adenoids must be seen to.

The child should be taught to blow its nose several times a day; and if any difficulty in thus clearing the nose so as to allow of comfortable breathing through the nostrils, he should at once be taken back to the surgeon for examination.



ADENOIDS: AFTER OPERATION

The child is shown in the position of the adenoids.

**ADENOMA.** A non-cancerous tumour composed of tissue resembling that of the secreting glands. There are two varieties, one of which occurs most commonly in the lower part of the bowel; the other chiefly in the breast and the prostate gland. If removed, they do not grow again, thus differing from the cancerous growths, many of which attack glandular tissues.

**ADHESIONS.** After inflammation has subsided in any of the cavities of the body, such as the joints, the abdomen, or the sacs which enclose the lungs or the heart, surfaces which in health should glide easily over one another may become tied down by strong fibrous bands called adhesions. In the abdomen such adhesions may, by their contraction, cause serious obstructions to the bowels. The chief symptom suggesting adhesions is a vague, dragging pain felt continuously in the region of an old operation scar, or at the site of some old inflammation.

The condition is very difficult to diagnose during life. The only satisfactory treatment is an exploratory operation by the surgeon, with a removal of the adhesions.

**ADHESIVE PLASTER.** Another name for resin plaster, which is made of two parts resin, sixteen parts lead plaster, and one part hard soap.

**ADIPOCERE.** A wax-like substance into which the tissues of a dead body lying in water or damp earth are sometimes converted. Its presence may furnish evidence of the approximate time of death.

**ADIPOSE TISSUE, or FAT,** is composed of a network of fibrous tissue enclosing minute cells which contain oil (fat being fluid at the body temperature of 98.2 degrees F.).

**ADIPOSIS DOLOROSA.** A little-understood affection, commonest in young women, in which abnormal masses of fat are laid down in the limbs and other parts of the body. The victims suffer from headache, pains, and great debility. The treatment is similar to that for general corpulence. A preparation of thyroid gland may sometimes be administered with benefit, but only under the physician's immediate supervision.

**ADRENALIN** is an extract of the supra-renal glands of the kidneys, which has a powerful constricting action on most of the small arteries (but not those of the brain or lungs). It stimulates the glands, especially the salivary glands, and produces contraction of the unstriated muscle fibres which are found in the uterus, vagina, vas deferens, etc.

It is sometimes used to stop bleeding of the nose, bleeding from the womb, before operations on piles, or adenoids, to reduce the amount of

In these cases a gauze plug soaked in a solution of adrenalin (1 in 1,000) is applied, or a spray (1 of adrenalin in 2,500 of water) is directed on the bleeding point. Suppositories containing 10 minims of a 1 in 1,000 solution are sometimes employed for bleeding from the bowels, or bleeding piles.

A hypodermic injection of 30 minims of a 1 in 1,000 solution may be given in failure of the heart or shock (which may be described as an abnormal collecting of blood in the abdominal vessels). Introduced into the womb, it produces strong contractions, and may therefore be useful in conditions such as flooding, due to failure of the womb to contract after labour. For bleeding in the stomach, 5 to 30 minims of 1 in 1,000 solution are sometimes prescribed.

Adrenalin should not be given in cases of bleeding from the lungs.

**ADULTERATION.** It has been estimated that about 40 per cent. of the articles of food sold in this country are adulterated.

Looking at the matter solely from the point of view of health, this fraud does not affect the consumer injuriously in all, or even in a majority of cases. Cocoa, for instance, may be adulterated with sago or flour, margarine with cotton-seed oil, mustard with starch, without doing the slightest harm; and as they may be sold cheaper because of the adulteration, the purchaser may not suffer even in pocket.

But in a great many cases more or less injury is caused by the prevalent practice of removing valuable constituents of food, such as cream from milk; adding substances of inferior value, as apple pulp to jam; and, above all, by the addition of preservatives.

These last may not only be injurious in themselves, but they are used to cloak harmful decay, as in the case of bicarbonate of soda added to acidifying milk, or to prevent the consequences of dirty manipulation.

**Milk.** Of all cases of adulteration, the one which has the most serious consequences is that of milk. Many city children are veritably starved because their milk is lacking in nutrition owing to the abstraction of cream and the addition of water. These are the two chief forms of adulteration.

A very low legal standard is fixed by Act of Parliament for the quality of milk. It is not the quality supplied by a good, healthy cow, nor even the average quality of a herd of cows, good and bad, but something much lower. The fat in the milk actually supplied by a high-class London dairy frequently amounts to 4.1 per cent.; the legal standard fixed by the Act is only 3 per cent. In the milk of a good cow there may be  $4\frac{1}{2}$  to 6 per cent. of fat. But as the legal standard is 3 per cent., farmers and dairymen may extract cream (fat) until they have reduced it to that percentage. It is then not sufficiently nourishing for growing children.

Unfortunately, much of the milk sold does not contain even 3 per cent. and the activity of the inspectors does not suffice to prevent this fraud, which is answerable for a great amount of ill-health and poor development of children.

Besides abstracting part of the fat, it is a very prevalent custom to weaken still further the milk by adding water. This gives the milk a bluish tinge,



and to conceal the tell-tale hue the dairyman adds some yellow colouring matter. Good, pure milk is nearly white, with a slight creamy tinge. When the household supply is yellow, there is always room for suspicion that water and colouring matter have been added to the milk.

The consumer can scarcely protect himself against this fraud. Yet if there are children or invalids in the house, it would repay him to take some trouble. One measure he should certainly put in practice—namely, to refuse to accept suspiciously yellow milk. There are two other simple means of detecting fraud—to measure the proportion of cream, and to ascertain the specific gravity of the milk. For this purpose a lactometer and a tall, narrow, glass vessel are required. Both can be purchased through a chemist.

On receiving the milk, stir it up well or shake it in a large bottle, to distribute the cream equally. Then fill the glass vessel, and put it by for twelve or sixteen hours. At the end of that time the cream on top should measure at least one-tenth of the column of fluid. Put the lactometer in another portion of the milk, and note the specific gravity. This should be between 1,026 and 1,035 in good whole milk.

But as the cream is lighter than the remainder of the milk, if the dairyman has abstracted some cream the specific gravity will be higher. He may have added water, and so brought the specific gravity once more to that of good milk. The test is therefore of value only when the milk contains its proper proportion of cream, as indicated by the graduated glass vessel. Thus while the consumer can protect himself to some extent, he cannot do so completely.

Now there is no ground for hoping that every dairyman will be perfectly honest of his own accord. And as this is such an important question for people with families, it would be well if everyone would use his influence to stimulate the inspectors to greater activity, and the magistrates to take a more serious view of this harmful fraud.

Another adulterant of milk is the preservative, mostly boric acid, often put in to keep it sweet. Milk sold in large cities is often twenty-four hours, sometimes thirty-six hours old before it is consumed. If it were not "preserved" it would be quite sour in warm weather. Unfortunately, by the use of preservatives the farmer and dairyman can also escape the trouble of securing strict cleanliness. Hence preserved milk may be, and frequently is, dirty milk.

That preservatives in the amount frequently used are injurious there is no doubt. This amount is often very large. A medicinal dose of boric acid might be about 10 grains three or four times daily for an adult, perhaps for a child of six months. But 30, 40, 50 grains, and more, have been found in a pint of London milk.

Professor Blyth has given evidence of milk containing 80 grains per pint. The farmer first puts in some preservative, then the wholesale dealer puts in



TESTING FOR ADULTERATION IN THE GOVERNMENT LABORATORY IN CLEMENT'S INN

The work done in the Government laboratory is for Government purposes only. There is no official laboratory for the detection of food adulteration in England as there are on the Continent. Local analysts are appointed by municipalities under the Food and Drugs Acts, and it is suggested that under this system the subject of food adulteration does not receive sufficient attention.

some more to keep the milk sweet longer. Next the retail dealer makes his addition, and by the time the milk comes to the consumer it is as much a medicine as an article of nutriment. The Departmental Committee on Food Preservatives said in its Report: "There is evidence pointing to an injurious effect of boracised milk upon the health of very young children."

But older children and adult invalids also suffer. Professor Wiley, of the United States Department of Agriculture, made exhaustive experiments with boric acid on healthy young men, and he says: "It appears that both boric acid and borax, when administered in small doses for a long time, or when given in larger quantities—46 grains per day—for a shorter period, create disturbances of appetite, of digestion, and of health."

Professor Wiley says that even 8 grains per day for a long time proves injurious to a healthy man. Frequently young children consume very much more than that, and a child's digestion is more easily upset than the digestion of an adult.

Besides disturbing the appetite, digestion, and health generally, it causes "a feeling of depression and fulness of the head," says Dr. Thomas, Medical Officer of Health for Stepney. In the "British Medical Journal," January, 1899, a case was described of a man who became completely bald from taking 60 grains of boric acid daily for three weeks; another suffered from great dryness of the skin; and a third case developed a rash on the face, body, arms, and legs. This last person consumed only 30 grains a day for ten days. Forty grains a day has produced the serious condition of albuminuria in one week; and in another case severe dyspepsia occurred in a lady from taking milk preserved with boric acid. When she stopped the milk the dyspepsia vanished.

Formaldehyde is also occasionally used as a preservative for milk. It has been shown that one part of this preservative in 100,000 parts of milk is injurious to children. Yet as much as one part in 25,000 has been found in milk on sale in great cities.

Bicarbonate of soda is sometimes added to neutralise acidity of old milk. This is not very harmful, but it may cause indigestion in a young child. Other preservatives are used, but not often.

These preservatives are sold, it may be pointed out, without any restriction. They consist mostly of boric acid, but sometimes of more dangerous drugs. They are extensively advertised under fancy names, and the farmer, the milk-seller, the butcher, the fishmonger, etc., buy them often without having any knowledge of their composition. It is a most dangerous state of affairs.

While an infant gets all its preservatives in milk, older children and adults take a dose with almost everything they eat. The result is that most people consume a very large quantity of drugs in their food every day. Quite possibly the increase of certain diseases may be due to this drug consumption.



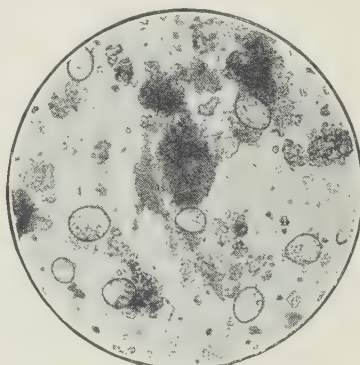
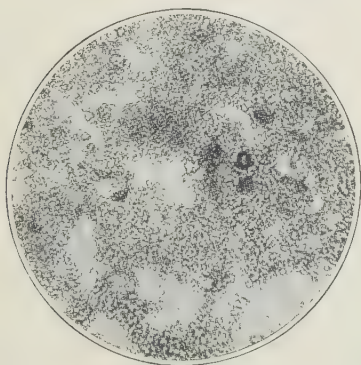
The extraordinary prevalence of appendicitis has been put down by some authorities to this cause. The increase of digestive diseases may also be due to it. Even the alarming development of cancer may some day be brought home to boric acid and other drugs in our food, for the effect of these drugs is undoubtedly to reduce the vitality of the tissues of the body.

Boric acid accumulates in the system under certain conditions. When a healthy person takes a dose it is found to have all disappeared from the system within two days; in a person with kidney disease some of the drug taken experimentally was still in his body at the end of fifty-three days. A person with kidney disease taking this drug in his food may, therefore, have an immense quantity in his body at the end of a couple of months.

To cream a great deal of boric acid is commonly added. This article is also adulterated with gelatine and starch paste to make it appear thick.



Clarke  
HOW BUTTER IS ADULTERATED



PURE AND ADULTERATED COCOA

In the second of these two microphotographs the adulteration with starch (the granules ringed round in black) is clearly shown. This starch means added arrowroot, or sago flour. Colouring matter is also present.

Smith

**Butter** is adulterated with margarine, milk, and water. Russian butter comes to this country in a comparatively pure state and containing only 10 per cent. of water. The butter merchants then add 6 per cent. more of water, keeping within the legal limit of 16 per cent.

**Margarine.** Good margarine is not unwholesome, but much of it is adulterated with cotton-seed, cocoanut, and other cheap oils, so that in butter as it is frequently sold we get a strange medley of ingredients. It is impossible to detect small quantities of margarine in butter, and even large quantities

try the skill of the analyst. The flavour is a good guide. Anyone who knows the delicious flavour of good butter cannot be deceived by a flavourless article consisting largely of margarine. Preservatives are also freely added to butter. As much as 120 grains boric acid have been found in a pound of butter.

Originally made only of beef fat, margarine can now be composed of anything the manufacturer chooses. If unscrupulous, he may adulterate it with cheap cocoanut oil, cotton-seed oil, linseed, ground nut, and fish oils, solid paraffin, as much water and milk as it will hold (margarine has been analysed which contained one-third of its weight of water), gelatinous matter, starch, etc.

**Cheese**, made chiefly from skimmed milk, is frequently adulterated by adding margarine or other cheap fat to take the place of its natural cream fat.

**Lard** is often adulterated with cotton-seed oil. In many towns it is next to impossible to get pure lard. Suet is frequently adulterated with rice flour. These additions, of course, diminish their nutritive qualities, and so give the buyer less value for his money.

Other common adulterations are the following.

**Olive Oil** may be mixed with cotton-seed oil. Often the latter is sold under the name of "pure olive oil."

**Almond Oil** may be adulterated with pine-seed oil.

**Jam** is not uncommonly adulterated with unwholesome imported "apple jelly" and other cheap substances: with glucose instead of sugar, with saccharin and other things. It may be preserved with salicylic acid, and flavoured and dyed with coal-tar products.

**Sugar** is often adulterated with glucose. Dyed sugar is sometimes sold as Demerara sugar.

**Honey** may be adulterated with glucose, and sometimes consists entirely of that unwholesome article. Glucose not infrequently contains arsenic.

**Pepper** is sometimes adulterated with ground husks, ground rice, gypsum, and other substances.

**Coffee** may be adulterated by the addition of ground roasted wheat, etc.

**Cocoa** is sometimes adulterated with arrowroot, sago flour, ground cocoa-shells, etc. It is then coloured with oxide of iron.

**Chocolate** may be adulterated with starch, and **Rice** with mineral matter.

**Wine** is largely adulterated. Much of the wine sold under the name of port, etc., is not wine at all, but potato spirit flavoured and dyed with chemical products. But to even "genuine" port and sherry there is often an addition of potato spirit. Whisky is also adulterated in the same way; and many of the cheaper brandies have little or none of the grape in them.

Then there is the prevalent addition of colouring matter to very many articles of food, and preservatives to everything that can go bad.

Colouring matter is not infrequently added to milk, butter, cheese, mustard,

cocoa, jams, jellies, sweets, sugar, wines, peas, spinach, pickles, etc. In the case of peas, spinach, and other vegetables the dangerous drug copper sulphate is sometimes used. It may do no great harm as a rule, but it is sometimes very injurious. Flour is often bleached with the sulphites.

Among the preservatives most commonly used are the following :

*Boric acid* in milk, cream, bacon, ham, sausages, fish, potted shrimps, prawns, meat, etc.

*Salicylic acid* in port, sherry, elderberry, orange, currant, and other British wines, cider, beer, lime-juice, lemon-juice, sauces, meat-juices, sausages, potted meats. As much as 140 grains has been found in a gallon of black-currant wine, 28 grains in a gallon of beer. A fair medicinal dose is 5 to 10 grains. It is an irritant to the stomach, delays digestion, depresses the heart, produces skin eruptions, and is dangerous in kidney disease.

*Formaldehyde*, or, rather, its solution in water, called formalin, is sometimes sprayed or painted on fish, meat, fruit, is added to ginger-beer and other temperance drinks, and is used in dairy products. It delays digestion and may cause a rash on the skin.

*Sulphites* are sometimes used in beer, wine, cider, cordials, lime and lemon juice, catsup, anchovy paste, dried apricots, etc., pickles, vinegar, jams, and on butchers' meat, poultry, and game. They are also used for bleaching flour. They may cause headache, diarrhœa, vomiting, injure the kidneys, and produce a general feeling of low health.

*Saccharin* is sometimes used in beer, cider, jam, etc. It probably delays digestion.

Other drugs sometimes used are creosote (on kippered herrings, etc.), sulphurous acid, alum, saltpetre, and formic acid, which is an irritant to the stomach.



FOOD ANALYSTS AT WORK IN THE PARIS MUNICIPAL LABORATORY



**ADYNAMIA.** A term used to indicate a very low state of the vital powers, which sometimes occurs in typhoid fever and other diseases.

**ÆTHER** is another spelling for the word "ether."

**ÆTIOLOGY** is the medical name given to causation in disease.

**AFFUSION, COLD.** This is given by covering the patient with a wet sheet, and keeping it constantly wet by sprinkling with cold water. A watering-pot can be used for the purpose. If the patient is in bed, he should lie on a waterproof sheet long enough to hang down at the end of the bed. The head of the bed being raised, the water flows into a tub placed at the foot. Cold affusions are sometimes of service in sunstroke or typhoid fever where the temperature is very high.

**AFTERBIRTH,** the common name for the placenta, the thick spongy mass of tissue, largely made up of blood-vessels, which attaches the unborn infant to the inner surface of the womb. It is because the placenta loosens from its attachments to the womb and is expelled after the birth of the infant that it has received its common name.

Whether after a full-time labour or after a miscarriage, it is all important that every particle of the placenta and membranes come away from within the womb. If any portion is left behind it is very likely to set up serious inflammation, which may run on to fatal blood-poisoning.

**AFTERPAINS.** Sometimes for two or three days after childbirth the mother will experience pains similar to, but not so severe as, labour pains. As a rule, their presence gives no serious inconvenience, and no treatment is necessary. Hot turpentine stupes, made by sprinkling a few drops of turpentine over a folded towel which has been wrung out in very hot water, may be placed over the abdomen if the pains are severe. A hot vaginal douche, by bringing away a retained blood-clot, will often stop the pains.

**AGE CHANGES.** People grow old at very different rates, but sooner or later the tissues in all cases undergo a certain amount of degeneration. Muscles and ligaments become less elastic, joints stiffen, and the bones in general become brittle, and some even change their shape (*see* illustrations of jaw bone on page 45). Fat, which may greatly increase about middle life, or earlier, may become absorbed in old age. The skin tends to become dry and harsh, and the lens of the eye flattens, making near vision defective.

All these and other changes are more or less serious evils. Loss of hair favours neuralgia pains in the head. Loss of teeth may give rise to troublesome dyspepsia, with a host of consequences, such as dizziness, headache, sleeplessness, dulness, etc. Stiffening of the joints and loss of elasticity in the muscles and ligaments hinder active exercise, and this favours corpulence, which further reduces a person's activity. Brittleness of the bones makes them more liable to fracture.

As a general rule, most of the great organs begin to show some signs of wear about the age of forty to forty-five. Heart, lungs, liver, kidneys, and the digestive organs gradually grow less and less able to perform their functions and more and more liable to disease. Before the age of thirty-five the principal causes of death are the infectious diseases; after forty, heart, liver, kidney, and nervous diseases become increasingly fatal.

The most serious change of all is that which occurs in the arteries. These vessels tend to become less elastic and less soft as middle age is left behind. In consequence the circulation of the blood is not so well accomplished, and a greater strain is thrown on the heart. Because of their brittleness certain of the arteries, particularly those of the brain, are liable to burst when the pressure of the blood for any reason is abnormally raised. Thus apoplexy is one of the dangers of middle life and onwards.

Every prudent person should understand the changes which occur throughout his body as life advances, and take measures to delay and diminish them. When the period of full bone development is reached, say about thirty, he should begin to limit his food to the amount actually necessary. When the time



HOW THE BONES OF THE JAW CHANGE WITH AGE

These drawings show the shape and relative size of the lower jaw at puberty, adult life, and in old age.

comes at which vigorous exercise is no longer possible his meals should be considerably reduced, especially in their content of meat. Alcohol should be taken in great moderation, and many people will find their health better if they refrain altogether from its use after the age of forty. From this age (forty) severe muscular exertion is best avoided. One severe feat, such as climbing a mountain, rowing in a race, cycling up a steep, long hill, may permanently disable the heart. Prolonged mental work, because it tends to raise the blood pressure in the arteries, must also be avoided.

In middle life the clothing should be warm, and exposure to chills should be avoided. In old age these measures are still more important. The old person should eat very sparingly. He should particularly avoid the often recommended practice of taking soups, jellies, etc., at frequent intervals to "keep up his strength."

**Diet in Old Age.** As the old man makes less demands on his muscles (through taking less exercise) there is less wear and tear on his tissues. He therefore needs less tissue-repairing foods. In other words, as old age comes

on he should cut down his daily amount of protein or meaty foods. In the same way, as his circulation becomes less vigorous through advancing years, he has trouble in keeping warm, hence he must place more and more reliance on heat-producing foods.

Practically without exception the kidneys of everyone who has left middle age behind him show signs of wear and tear. Hence the diet must be further readjusted so as to throw as little strain as possible on these organs. Gouty acidity and a tendency to flatulence are also common in old people. These too, then, must be taken into consideration in drawing up the diet.

As the general vigour of the digestive organs diminishes considerably in old age, the meals should not only be smaller in amount, but also at more infrequent intervals. Overloading the stomach at any one meal should be particularly avoided on account of the tendency of the aged to flatulence.

The following is a typical diet for the average old man or woman who takes little vigorous exercise and has no particular ailment which calls for special foods.

7 a.m. A cup of tea with milk and sugar, and a small slice of buttered whole-meal bread.

8.30 a.m., *Breakfast*. A cup of tea with milk and sugar, or cocoa, toast or stale bread-and-butter, a boiled egg or a little boiled fish, and a small helping of stewed fruit.

1 p.m., *Dinner*. A little broth (meat or vegetable), boiled chicken or white fish, a moderate amount of green vegetables, tomatoes, cooked celery, or onions, a little mashed potatoes (if not given to flatulency), with milk pudding.

4.30 p.m. Tea, with a little dry toast.

7 p.m., *Supper*. A little boiled fish, bread-and-butter, and a little light pudding or stewed fruit.

Just before going to bed a glass of hot milk or a little beef or chicken broth with a biscuit or two may help in inducing sleep.

Heavy meats, such as pork, roast beef, kidneys, and the more oily fish such as mackerel and salmon, should be avoided by old people.

**AGGLUTINATION** means the clinging together in masses of small bodies, such as blood corpuscles, bacteria, and other microscopical organisms when suspended in a fluid. The process of agglutination is the basis of the "Widal's reaction," the test for typhoid fever. Living typhoid bacilli, when grown in fluid in a laboratory, may be seen under a microscope to be moving about singly in the solution containing them. When to a little of this fluid containing the freely-moving bacilli a drop or two of the blood serum of a typhoid patient is added, the bacilli soon lose their power of motion, and "agglutinate"—that is, collect together, motionless, in little clumps or masses.



In shed blood the blood-cells, instead of remaining free and moving against one another, "agglutinate" into masses.

**AGRAPHIA.** A condition in which the patient cannot write owing to some abnormality of the writing-centre in the brain. He may be able to copy, though not able to write spontaneously or from dictation, or he may be unable to write at all.

**AGUE.** A popular name for Malaria.

**AGUE CAKE.** A name given to the enlarged spleen of the patient suffering from Ague or Malaria. A spleen thus enlarged may take months, and sometimes years, to return to its ordinary size.

**AQUA FORTIS.** An old name for nitric acid.

**AIR** is composed of 79 per cent. of nitrogen, 20.96 per cent. of oxygen, and about 0.04 per cent. carbonic acid gas. Far out at sea and high in the mountains it is quite pure. But on land it may contain particles of vegetable fibre, pollen, mineral dust, carbon, and other impurities, as well as a variety of microbes. [See illustration on page 49.]



THE AGGLUTINATION OF TYPHOID BACILLI

This diagram shows how the typhoid bacilli lose their power of free motion and "agglutinate" on the addition of serum.

**AIR, DISINFECTION OF.** Many useless methods are practised, such as placing vessels of liquid antiseptics on the floor, burning sulphur, etc. There is really no practical means of disinfecting the air of a sick-room; it can, however, be kept sufficiently pure by free ventilation. For this purpose have a fire or a lighted lamp in an open grate, and keep the windows open, protecting the patient, of course, from draughts.

**AIR IN THE BODY TISSUES (EMPHYSEMA).** Air may get into many parts of the body through a wound, external or internal. A fractured rib cutting into the lung will allow air to escape into the pleural cavity. If the windpipe or bronchial tubes are wounded, air may pass into the surrounding tissues. A wound of the intestine may allow gases to escape into the tissues of the abdominal wall. Wounds of the chest and other parts may allow the ingress of air into the connective tissue. Constant coughing and other forms of forced expiration with a closed or partly closed glottis, as in glass-blowing or trombone playing, may distend the alveoli or air-cells of the lung, and bring about the condition known as emphysema. See EMPHYSEMA.

**ALBINISM.** Through an absence of normal colouring matter in the hair, the deeper layers of the skin, and the iris of the eye, certain people show a very pale pink skin-colouring with snow-white hair, and pink eyes with red pupils. This condition is termed albinism. It is congenital, and is quite incurable. The children of albinos are very apt to inherit the lack of colouring of their parents. The disease is commonest among the negro races, but there have been numerous instances of true albinism in the children of fair parents with no trace of albinism in their ancestry.

The commonest characteristics of the albino, apart from the snow-white hair and pink eyes, is the stooping gait with the head thrust forward, assumed to protect the eyes as much as possible from the light. The absence of colouring matter in the eyes leaves them particularly susceptible to the action of light, and frequently leads to chronic inflammation, with redness of the lids.

The condition is absolutely incurable. As many albinos are not strong physically, and may even show signs of mental feebleness, particular care should be taken of the general health, and any occupation involving prolonged mental or physical stress should be avoided, if possible.

**ALBULACTIN** is a pure salt of albumin, containing carbon, hydrogen, oxygen, nitrogen, sulphur, and sodium, with traces of phosphorus, which is commonly used in medicine in the feeding of infants who digest with difficulty ordinary cow's milk mixtures.

Added to cow's milk in proper amounts, a mixture can be made practically identical with mother's milk as far as its one vitally essential element, the proteid milk-albumin, is concerned.

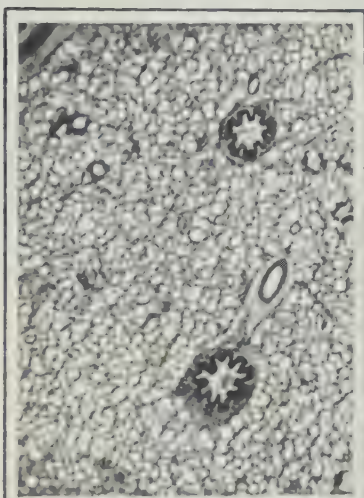
The immense importance of supplying the growing child with proteid (albumin) in a form which it can digest should be fully understood by every mother who has a young baby to bring up.

Taking 100 parts of cow's milk and 100 parts of human milk, we find their composition varies widely in two points, the proteids and the sugar (Still).

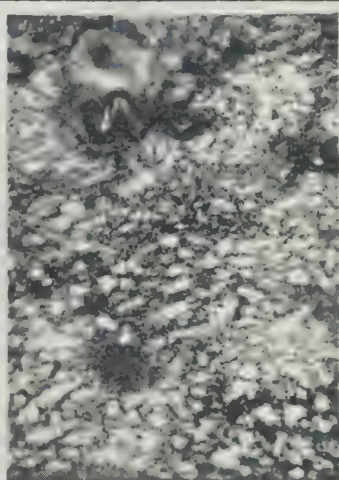
—			Cow's milk	Human milk
Proteids	..	..	4	2
Fat	..	..	3.5	3.5
Sugar	..	..	4	7

Cow's milk, in other words, contains twice as much proteids as human milk, the same amount of fat, but is only about two-thirds as sweet.

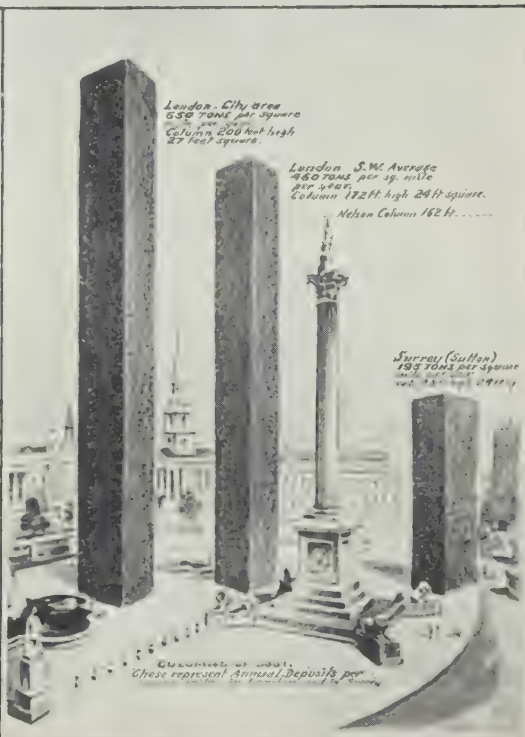
To modify cow's milk so as to obtain a fluid closely resembling human milk would seem at first sight a comparatively simple matter. The first step would be to dilute the cow's milk with its own bulk of pure water (this would reduce the proteids to about the right percentage), and then add cream and sugar until the correct proportions of richness and sweetness were obtained.



COUNTRYMAN'S LUNGS MAGNIFIED  
Showing the tissues free from impurities



LONDONER'S LUNGS MAGNIFIED  
Clogged with atmospheric impurities



ANNUAL DEPOSITS FROM THE AIR IN LONDON AND THE COUNTRY COMPARED



The reason why "humanised milk" made up on those lines usually turns out in practice to be a starvation diet for the infant and a source of illness lies in the different proportions of the chief proteids in the two milks.

Roughly speaking, the proteids present in both cow's milk and human milk are of two main varieties, casein and milk-albumin. The difference then, in the food value of the two fluids is not in the character of their proteids, but in the proportions of them present. The table below shows the proportions of casein and milk-albumin found in human and cow's milk (G. F. Still).

—	Human milk	Cow's milk
Casein . . . . .	0.6 %	3.25 %
Milk albumin . . . . .	1.4 %	0.75 %

In other words, human milk contains twice as much milk-albumin as does cow's milk and less than one-fifth as much casein.

Now, the nourishment value of casein to the baby is almost negligible, because casein is very indigestible to the infant stomach. In fact, practically all the nourishment the baby gets from its milk comes from the milk-albumin, which is readily dissolved and easily digested. On the other hand, the casein is readily digestible by the new-born calf. Bearing these facts in mind, it is easy to understand why Nature supplied the great bulk of the proteid in human milk in the form of milk-albumin (which is readily digested by the human infant), while making the bulk of the proteid in cow's milk casein, readily digestible by the calf.

These great differences in the relative proportions of the indigestible and digestible proteids or albumins is the reason why milks modified by diluting with water and adding simply sugar and cream so frequently fail to supply the infant with the nourishment it requires.

If we start by adding an equal amount of water to cow's milk to reduce its 4 per cent. of proteid to the 2 per cent. in human milk, we at the same time reduce the milk-albumin, the only proteid the child can readily digest, down to about one-third of 1 per cent., as compared with the 2 per cent. in mother's milk.

Albulactin, which is the readily digestible proteid or soluble milk-albumin obtained from cow's milk, is now largely prescribed by physicians to supply this indispensable proteid of which the child is deprived in most other methods of artificial feeding. After diluting the milk sufficiently to bring the indigestible casein ratio down to that in human milk, half a teaspoonful of albulactin (as well as the required amounts of sugar and cream) is added to each feeding-bottle. In this way the infant is supplied with a mixture which is, perhaps, the closest imitation obtainable to mother's milk.

In addition to being largely prescribed in this way as a means of really "humanising" cow's milk, albulactin is also much used in cases of chronic indigestion, wasting, or marasmus, epidemic enteritis (summer complaint), and other upsets of the digestive tract where ordinary milk mixtures cannot be retained.

In acute epidemic enteritis, or summer complaint, a speedy clearing up of the symptoms can often be obtained by cutting off the milk and all other food entirely, and giving the following mixture at two-hour intervals :

℞

Albulactin	∴	∴	∴	∴	∴	∴	80 grains
Boiled water	∴	∴	∴	∴	∴	∴	6 ounces

Give three tablespoonsful every two hours in place of usual foods. The above dose would be suitable for a child of six weeks.

**ALBUMIN** is an important element in nearly all the tissues of the body. It is composed of nitrogen, carbon, oxygen, and hydrogen, with traces of phosphorus and sulphur. The presence of nitrogen distinguishes albumin from fats, sugars, and starches, which are composed of carbon, hydrogen, and oxygen only. There are several varieties of albumin, such as serum-albumin, present in the blood and other body fluids; egg-albumin, in white of egg; alkali-albumin or casein, in milk. Albumins are soluble in water, and are coagulated (clotted) by heat.

**ALBUMIN WATER**, useful sometimes as an alternative to milk in liquid feeding, is simply a mixture of the white of raw egg and water. Separate the yolk from the white of a perfectly fresh egg, and then pour the white on a clean flat plate. With a fork and a sharp knife cut the raw white of the egg several times across just as one would mince up meat. Then pour the white of the egg into a wide-mouthed glass jar, and add a pint of *cold* water. Close tightly, and shake till thoroughly mixed. Sugar or a drop or two of lemon-juice may be added to each feeding-cupful, according to the patient's taste.

**ALBUMINURIA** is the condition in which albumin is found in the urine. It should be looked upon as a symptom demanding instant attention, because it usually denotes kidney disease or heart trouble. During fevers, or in times of great mental stress, however, in anæmia, lead poisoning, or during pregnancy, temporary albuminuria may be present. In certain cases albumin may be found in the urine in perfectly healthy people without any symptoms being present to account for it. In the great majority of cases, however, its presence should be taken as denoting the immediate need for a thorough overhauling at the hands of one's physician.

Life assurance companies usually refuse to insure people who persistently show albumin in the urine. The cloudiness often noted in water which has

stood for some hours is not, as is commonly supposed, always due to albumin. Much more commonly harmless phosphates are the cause.

**Test for Albumin.**—A homely but reliable test for albumin is to pour a little of the suspected urine into an old tablespoon, and hold it over a spirit-flame until it begins to boil. It will turn turbid if albumin or phosphates are present. Now add a drop or two of vinegar. If the cloudiness is due to phosphates, the liquid will immediately clear up under the action of the vinegar; if it remains turbid, albumin is present, and the patient should lose no time in putting himself in a physician's hands for examination. The presence of the albumin may in some cases be readily accounted for as due to some temporary, easily removed cause. On the other hand, it may denote serious kidney or heart trouble, demanding active treatment and strict dieting.

**Treatment.** See BRIGHT'S DISEASE and HEART DISEASE.

**ALBUMINURIA IN CHILDREN.** Quite apart from the albuminuria of Bright's disease and kidney disease, albumin is sometimes found in the water of children when the kidneys are perfectly sound. The characteristic feature of these cases is that, whereas the test for albumin at one time will show its presence, it may be entirely absent at some other time during the day when the test is repeated.

**Symptoms.** Sometimes there may be no real "symptoms," the albuminuria only being discovered during the routine examination of the water at the start of one of the numerous diseases of childhood. In other cases, the child's pallor and puffiness about the eyes, with the history of constant headache and perhaps backache, may suggest kidney trouble.

**Treatment.** Beyond seeing that the child has an easily digestible and plentiful diet, with plenty of fresh air and outdoor exercise, no treatment is required. Those cases where the albumin is present at one time yet totally absent the next should not be looked upon as Bright's disease, nor do they usually develop into that ailment. In the great majority of cases the condition gradually passes off of itself as the child grows older.

**ALCOHOL** is obtained by distilling fermented sugary fluids. Absolute alcohol contains not less than 99 per cent. by weight of alcohol, and not more than 1 per cent. of water. Rectified spirit contains 90 per cent. of alcohol by volume. Proof spirit contains 57 per cent. The amount of alcohol in various spirits and beverages is given below:

	Percentage
Absinth .. .. .	60
Whisky, rum, gin, strong liquors .. .. .	51-59
Port .. .. .	20-30
Sherry and Madeira .. .. .	16-20
Champagne .. .. .	10-12
Burgundy, hock, and claret .. .. .	9-12
Cider .. .. .	5-9
Heavy ales and stout .. .. .	5-9
Beer, porter, and light ales .. .. .	2-5



**ALCOHOLISM, ACUTE AND CHRONIC.** The commonest type of acute alcohol poisoning, ordinarily known as drunkenness, needs no description. Such cases are best treated by putting the patient to bed and letting him sleep it off. If unusually great quantities of alcohol have been taken, the stomach should be emptied, either by an emetic of a tablespoonful of mustard in a glass of cold water, or by use of the stomach-tube. If the patient is in a violent uncontrollable state, the case should be treated as one of delirium tremens. This variety of acute alcoholic poisoning usually comes on after a prolonged bout of drinking, or may result from sudden mental worry or shock, or an accidental injury, in a chronic hard drinker. The early symptoms are tremors of the hands and tongue, sickness, fever, and a weak, irregular pulse. The patient has a furtive look, and cannot keep himself still. Later, he begins to "see things"; horrible monsters, snakes, toads, or mice appear to be surrounding him. Finally, he becomes wildly delirious, frequently developing suicidal or homicidal tendencies.

**Treatment** consists of constant careful nursing, confinement to bed, light liquid diet, chiefly milk and soups, and a sedative to quiet the nerves. Twenty grains of chloral, together with twenty grains of sodium bromide and three grains of caffeine citrate, given at one dose in milk, will usually have a quieting effect if the patient can be made to take it. A doctor should always be called in to decide whether heart stimulants are necessary.

Opinions are divided whether the patient's alcohol should be cut off completely or not. The doctor should advise on this matter after careful examination of the patient's state.

### CHRONIC ALCOHOLISM.

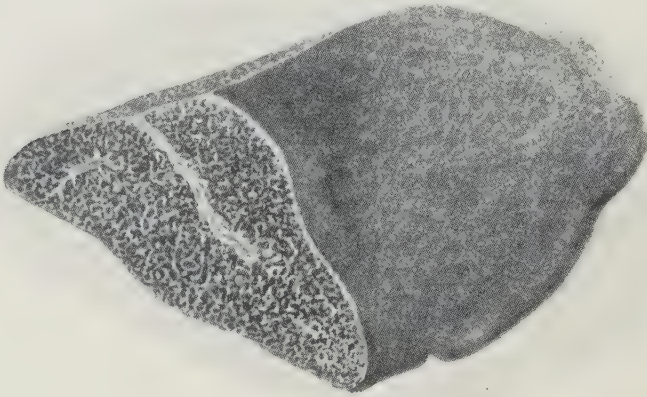
The symptoms of continuous over-indulgence in alcoholic beverages are both mental and bodily. The patient often becomes despondent, suspicious of his fellows, forgetful, and untrustworthy; he loses all mental energy and cannot keep his mind fixed on any one subject for long. Later he may develop fixed delusions that people are trying to injure him in one way or another.

Tremulousness of the hands, impaired sight, dyspepsia, morning vomiting, loss of appetite, cirrhosis of the liver ("nutmeg liver"), inflammation of the nerves (neuritis), and fatty changes in the heart and other internal organs are common symptoms. A hardening of the blood-vessels, increasing their liability to bursting (*see* APOPLEXY), and kidney disease are other very serious results of chronic alcoholism.

**Treatment.** No treatment is of any avail unless the patient will make a strong effort himself to give up all alcoholic beverages. Secret remedies given without the drunkard's knowledge are rarely successful unless during the drug treatment the patient is earnestly striving to control his habit. One of the best of these cures is that carried out by the Normyl Treatment Association, of 91, Victoria Street, London, S.W.

A home remedy which sometimes cures alcoholic cravings by creating a disgust for the taste of drink is infusion of chiretta. Infuse half a teaspoonful of these bitters (which any chemist can supply), in a pint of boiling water. Allow the mixture to cool, and give the patient, three times a day, two table-spoonsful of the resulting tea.

Apart from drug treatments the only other course is to secure the patient's admission to some inebriate home where, during an enforced abstinence fo



SECTION OF A CIRRHOTIC ("NUTMEGGED") LIVER.

The speckled, "nutmeg" appearance is due to the abnormal fibrous tissue which has displaced the healthy liver cells. From a drawing made at Guy's Hospital of an alcoholised liver

several months, he may build up his bodily health, and at the same time recover his impaired mental control, so that on his return to the world he will be provided with sufficient strength of mind to withstand his craving.

### ALCOHOL AND ITS EFFECTS.

Alcohol, formerly largely used in medicine, has now been to a great extent replaced by other drugs which have some stimulating qualities without the disadvantageous after-effects which always follow the use of alcohol.

The following table shows the amount paid out relatively for stimulants and milk at the infirmary of the Wandsworth Union, London, in recent years.

Year	Number of patients under treatment	Total cost of wine and spirits			Total cost of milk		
		£	s.	d.	£	s.	d.
1875	1,405	371	0	0	407	0	0
1885	2,419	53	0	0	577	0	0
1895	3,559	3	19	2	1,143	0	0
1905	5,451	2	7	5	1,226	0	0

In fevers, alcohol, which used to be a standard drug, is now very rarely prescribed at all. On this subject Sir James Barr, M.D., writing about typhoid, says, "Pneumonia and typhoid fever are the two principal diseases in which alcohol has been largely prescribed, but in the latter disease it is even more useless than in the former; there is scarcely an indication for its use, while the protracted nature of the disease allows the medicament more time to work mischief."

In small doses the first effect of alcohol is to excite the brain and nervous system. An example of this is the noisiness and rowdiness so common in early drunkenness. After large doses, however, the nervous system becomes more or less paralysed, as exemplified in the heavy stupor of the man fully intoxicated.

The immediate action on the heart when small doses are taken is to accelerate the circulation, thus giving rise to a feeling of warmth. When larger doses are taken, the blood-vessels become dilated and lose their normal tone, so that the body heat falls.

Whether or not alcohol deserves to be considered as a food is still a moot point. In small doses, however, it has a stimulating effect on the stomach vessels and muscles, encouraging digestion.



EXTERNAL VIEWS OF HEALTHY AND CIRRHOTIC ("NUTMEGGED") LIVERS

Note the complete smoothness of the normal liver contrasted with the "nutmegged" surface which occurs in cirrhosis of the liver in alcoholism.

Alcohol, needless to say, should not be considered as a true remedy for dyspepsia or abdominal pains. Sometimes vague feelings of discomfort in the stomach may be lessened by a "nip of spirits," but the relief comes largely from the narcotic influence of the drug on the stomach nerves. The dyspepsia may be temporarily disguised, but it is not removed, and the irritant effect alcohol always has on the stomach lining is almost certain to aggravate it.

Because alcohol in small doses is "burnt up" within the system, with the liberation of a certain amount of energy, it is by some authorities looked upon as a food. On the other hand, alcohol is not a tissue repairer, nor is it an economic producer of energy for muscular work.



The reason that so many people who indulge in alcoholic beverages to excess are generally fat, is that alcohol slows the normal process of oxidation in the tissues, and so leads up to fatty degeneration and fatty infiltration.

**Effect on the Nervous and Muscular Systems.** On both the nervous and muscular systems the first effect of alcohol in small doses is an *apparent* increase in activity. The brain *seems* to work more quickly and more accurately, and the muscles seem to be capable of greater effort. As a matter of fact, however, alcohol, instead of increasing them, actually lessens both brain accuracy and precision and muscular activity.

A series of experiments carried out in Germany by Professor Aschaffenberg a few years ago with type-setters, well illustrates this point. A number of type-setters were allowed about one ounce of alcohol daily in the form of wine at meals. Without being told they were on trial, their work during this period of moderate drinking was carefully compared with their work when they only had water to drink. A loss of 10 per cent. of efficiency, both in the actual amount of work done and in its accuracy during the period when given the wine, was the result.

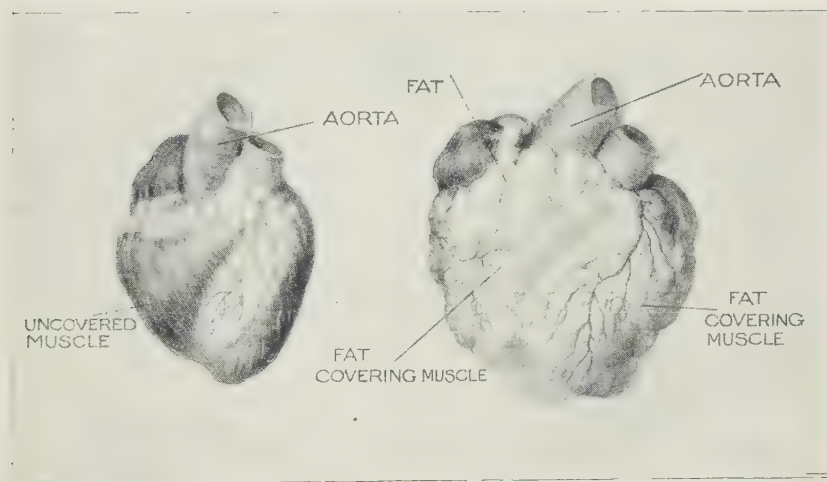
Dr. Chalmers Watson, in "Food and Feeding," quotes another interesting experiment carried out some years ago on three British regiments to determine the sustaining power of alcohol. These experiments show that the *apparent* initial increase in muscular activity is far from being a *true* increase. The men of the three regiments were all subjected to fatiguing exercises. To one regiment a ration of whisky was allowed, to the second a ration of malt liquor, and to the third no alcohol. The men taking the whisky exhibited more energy for about four days than either of the other groups, but then became weak and fatigued. On the other hand, the men who took no alcoholic stimulant at all steadily gained in physical endurance, while those taking malt liquor showed an intermediate condition.

One of the most mistaken beliefs about alcohol is that it is useful to "keep out the cold." The first action of alcohol on the blood vessels of the skin is to dilate them. When the skin has been thoroughly chilled by exposure to cold, the vessels contract down, and (as less warming blood can pass through them) the subject experiences a sensation of cold. Under the influence of alcohol these skin-vessels dilate, become filled with warmth-carrying blood from the deeper parts of the body, and the individual feels temporarily warmer. The immediately subsequent result, however, is that because more warmth-carrying blood is brought to the surface, more heat is carried off by the cold air which comes in contact with the skin. In other words, more heat is lost than is formed by the alcohol, so that in a few moments the body temperature is lower than before. The effort to keep out the cold has, therefore, only left the drinker colder.

**Alcohol and Indigestion.** Whereas very small amounts of alcohol apparently have a slight stimulating effect on the digestion, if too much is taken the digestion is appreciably slowed down.

Experiments with various wines commonly drunk show that they interfere with the digestion to a greater extent than can be explained by the quantities of alcohol they contain (Parkes). Thus French red wines have been found to interfere more with the digestion than white German wines. One of the worst is marsala, and one of the least objectionable is sparkling hock. Beer, according to these experiments, interferes very much more with the digestion than a corresponding quantity of dilute alcohol.

**Effects of Alcohol upon Longevity.** That the non-teetotaler stands a smaller chance of living to a ripe old age is shown by the better rates the Life Insurance Companies will give to non-drinkers. Dr. W. L. Reid, of Glasgow, recently gathered together a series of Insurance statistics which



EFFECTS OF ALCOHOLISM UPON THE HEART

On the left is a healthy heart with the muscle clearly seen; the alcoholic heart on the right has had so much fat deposited upon it that the muscle is almost completely covered.

make very unpleasant reading for the man who, although not a "teetotal faddist," assures himself that he nevertheless never drinks enough to harm himself physically or mentally. Dividing the great Friendly Societies into those composed of total abstainers and those whose regulations demand only "temperance," Dr. Reid found that in the official reports the "temperate" averaged nineteen days' sickness per annum, as compared with only fourteen days of the "total abstainers." In another insurance company quoted, in which the "expected" claims in the section insuring general lives amounted to £126,000, the actual amount paid out was £163,000. In the "temperance" section of the same company, against expected claims of £131,000, only £70,000 was actually paid.

That the effect of alcohol upon longevity is most decidedly injurious is strikingly shown in the following table (Sir Lauder Brunton) :

An intemperate person's chance of living is :	A temperate person's chance of living is :
At 20....15.6 years	At 20....44.2 years
„ 30....13.8 „	„ 30....36.5 „
„ 40....11.6 „	„ 40....28.8 „
„ 50....10.8 „	„ 50....21.25 „
„ 60....8.9 „	„ 60....14.28 „

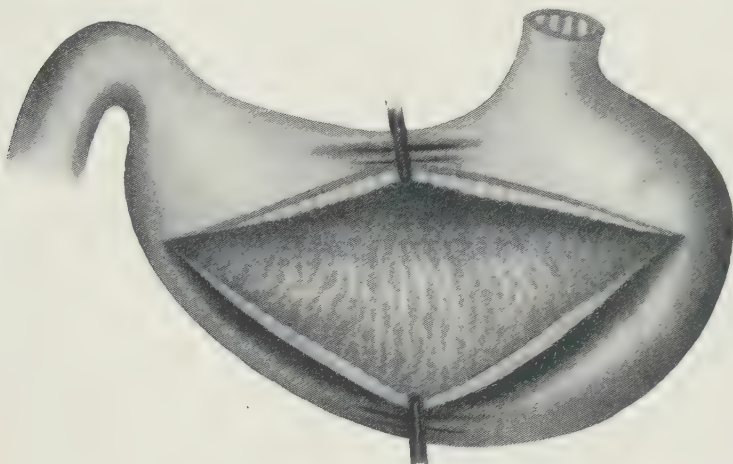
**How Much can be Drunk with Safety.** It has been estimated that the greatest amount of alcohol a robust and healthy man can take in twenty-four hours without injury is four tablespoonfuls, or two ounces. This corresponds to about four glasses of port or five glasses of sherry, madeira or marsala, or from half a bottle to a bottle of claret, burgundy, hock, moselle, or Hungarian wine (Parkes). It should not be forgotten, however, that these figures are not recommended as the ideal consumption for anyone. These amounts cannot possibly do one any good, and in any case they are the extreme limit.

**When is Alcohol Advisable?** At one time alcohol was largely prescribed as a heart stimulant, but in recent years it has become generally recognised that the physician has at hand a large number of other stimulants which are equally efficacious and nothing like so dangerous as alcohol. Occasionally, however, there are instances in which alcoholic beverages may legitimately be prescribed. For example, where the digestion is feeble and slow in an old person or one debilitated by overwork, a little weak spirits and water or a glass of wine at meal-times may have a stimulating effect on the digestive organs, and therefore really be of benefit.

Again, in insomnia a glass of warm brandy or whisky and water taken at bed-time sometimes promotes sleep. The alcohol acts here by dilating the blood-vessels of the stomach, and drawing thither blood from the brain. Here again, however, alcohol has its counterbalancing disadvantage, in that it stimulates the heart, which tends to induce rather than decrease sleeplessness. A glass of warm milk or warm Benger's food at bed-time has the advantage of dilating the stomach vessels in exactly the same way as the alcohol, without stirring up the heart to an increased activity, a condition to be avoided when one is trying to get to sleep.

While, as the general rule, it is the worst of policies, as we have seen, to attempt to "keep out the cold" by taking spirits, alcohol is undoubtedly useful under certain circumstances in warming the body chilled by exposure. Coming in after prolonged exposure to cold, the skin vessels sometimes are very slow in relaxing, even under the influence of a warm room. As a result little of the warmth-carrying blood from the deeper parts of the body can

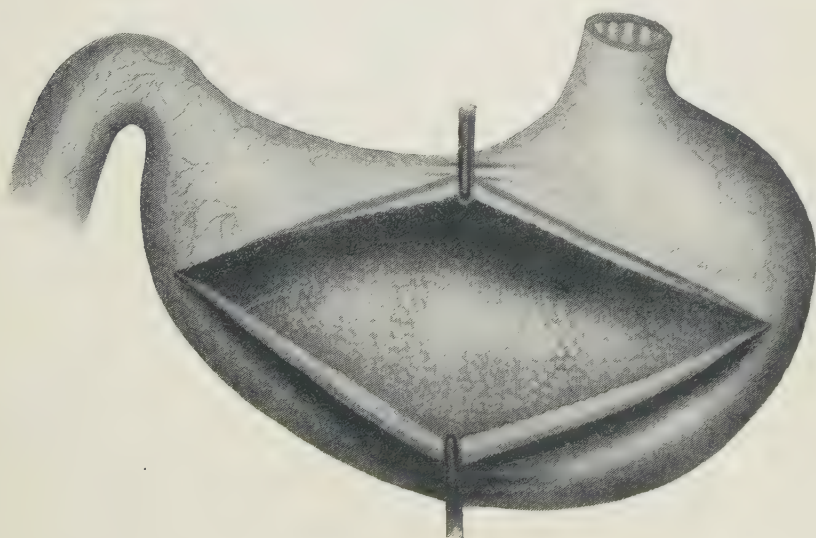




THE HEALTHY STOMACH SHOWING NORMAL LINING MEMERANE

reach the skin, so the patient for an hour or more may feel uncomfortably chilly or even cold.

Since the exposure to cold is past, and there is no longer any risk from wastage of body-heat, a glass of hot whisky or brandy might now, in rare instances, be taken with advantage. The result is a rapid dilatation of the skin vessels. The blood which fills them, circulating just under the skin, takes up warmth from the surrounding atmosphere and returns thoroughly warmed to the heart, giving rise to a general feeling of comfortable warmth.



THE STOMACH OF CHRONIC ALCOHOLISM SHOWING INFLAMED AND IRRITATED STATE

**Alcohol and Fatigue.** People often assert that nothing rests them so much when over-fatigued as a glass of strong wine or spirits. On the contrary, the exhaustion is not in the least removed by the drug, which acts simply as a deadening agent to the subject's sensations. The fatigue and its effects remain exactly as before (though they may not be so noticeable for the moment) and can only be removed by adequate repose or sleep. Instead of helping, then, alcohol here has an injurious effect, because while masking the fatigue it also has a depressent after-effect on the nervous system. A cup of hot tea or hot coffee would have the same temporary exhilarating influence (though, of course, they would not actually remove from the system the products of fatigue) without the depressent after-effect which alcohol undoubtedly has.

**Alcohol and the Memory.** The effect of even small doses of alcohol on the memory has been strikingly demonstrated by Professor Kræpelin, at Heidelberg. Persons were set to memorise columns of numbers, which they repeated again and again until they could be memorised correctly. It was found that without alcohol 100 figures could be remembered correctly after forty repetitions, while when the brain had been "stimulated" by small amounts of alcohol only sixty could be remembered correctly, even after sixty repetitions.

In another experiment half an hour daily for six days was utilised by a number of subjects in adding figures. During this time no alcoholic stimulants of any kind were allowed. The ability to add, as one would naturally expect, increased day by day. On the seventh day the experiments were continued under the influence of alcohol. In spite of the influence of the previous days' practice, the capability of adding did not increase, but instead it began to decrease very rapidly. On the nineteenth day the use of the alcohol was discontinued, and an immediate improvement in the ability to add showed itself. However, on the twenty-sixth day, when the alcohol was again resumed, a decided decrease in the power of adding figures again manifested itself.

**Alcohol and Children.** The depressing effect which alcohol has upon the vitality of most of the body tissues in the adult is even more marked in children. It prevents the tissue cells from developing normally, and thus directly tends to stunt the child's growth. Again, by irritating the stomach and liver, and so reducing the child's power to absorb nourishment, it leads indirectly to undergrowth and stunting.

One organ, in particular, in childhood appears to be very susceptible to the action of small doses of alcohol—namely, the liver. The small sips of wines and spirits which parents sometimes thoughtlessly give their children have in countless cases been known to produce serious disease and degeneration in this most important organ.

Another important reason why no child should even know the taste of any alcoholic beverage is that children who are accustomed to the daily use

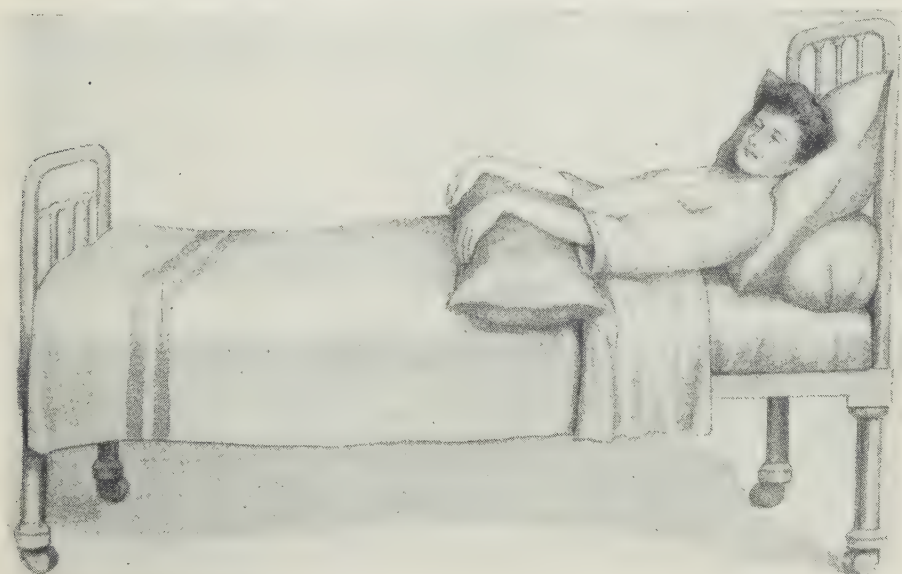
of the drug seem much more likely to contract infectious fevers, such as diphtheria and scarlet fever, and, in addition, succumb to these diseases much more readily than do those children who are brought up entirely without alcohol.

Sometimes children are subjected to the adverse influences of alcohol through being nursed by alcohol-drinking mothers. Such children often have convulsions, and are very restless and irritable—all of which nervous symptoms subside when the mother is induced to drink freely of milk and to abstain entirely from alcohol. ("Alcohol and the Human Body," Horsley and Sturge.)

The practice of giving children beer at supper-time (which, fortunately, is by no means as common now as formally) has been roundly condemned by Dr. Clement Dukes, Physician to Rugby School, who is an acknowledged authority on the subject of schoolboys. "Beer is a drug," he writes, "which deadens the will-power and excites the animal instincts of the young; its relation, therefore, to immorality is most momentous.

"In plain English, a master who allows his pupils to drink beer at bed-time, and a parent who sanctions it, implicitly says to them, 'I give you this beer at bed-time, well knowing that it will blunt your intellect, deaden your conscience, and diminish your will power; and at the same time it will excite your animal instincts.'"

Parents should also take care to avoid, whenever possible, giving children mixtures containing tinctures, as tinctures are practically always made up with alcohol.



AN ALCOHOLIC PATIENT SHOWING THE CHARACTERISTIC "DROP" OF THE WRISTS



**ALIMENTARY CANAL** is the term used to describe the whole digestive tract along which the food passes during the process of digestion. The total length from the throat to the lower end of the large intestine is about twenty-nine feet.

**ALKALI BURNS.** Lime, caustic potash, caustic soda, and strong ammonia cause severe burns when brought into contact with the skin. Vinegar diluted with water, lemon-juice, or any other dilute acid should be applied at once. Afterwards the part should be dressed with carbolic oil or boric ointment.

**ALKALIES** are, roughly speaking, the opposites of acids. They are commonly prescribed in medicine in acid dyspepsia, gout, and "general acidity," in the form of bicarbonates or carbonates of ammonium, sodium, or potassium.

**ALKALIES, POISONING BY.** When strong ammonia, soda, or potash solutions have been swallowed, the patient should immediately be given a half-pint of weak vinegar and water to drink. Follow this with bland liquids such as milk, white of an egg beaten up in water, barley water, or olive, linseed, or cod-liver oil. Keep the patient warm, and put hot-water bottles to his feet until the doctor arrives.

**ALKALOIDS** are powerful vegetable substances often used in medicine. Common examples are (1) Atropine, an alkaloid derived from the belladonna plant; (2) Cocaine, made from the cocoa leaves; (3) Morphine, from the juice of the poppy; (4) Quinine, from Peruvian bark; and (5) Strychnine, from the seeds of the *nux vomica* plant.

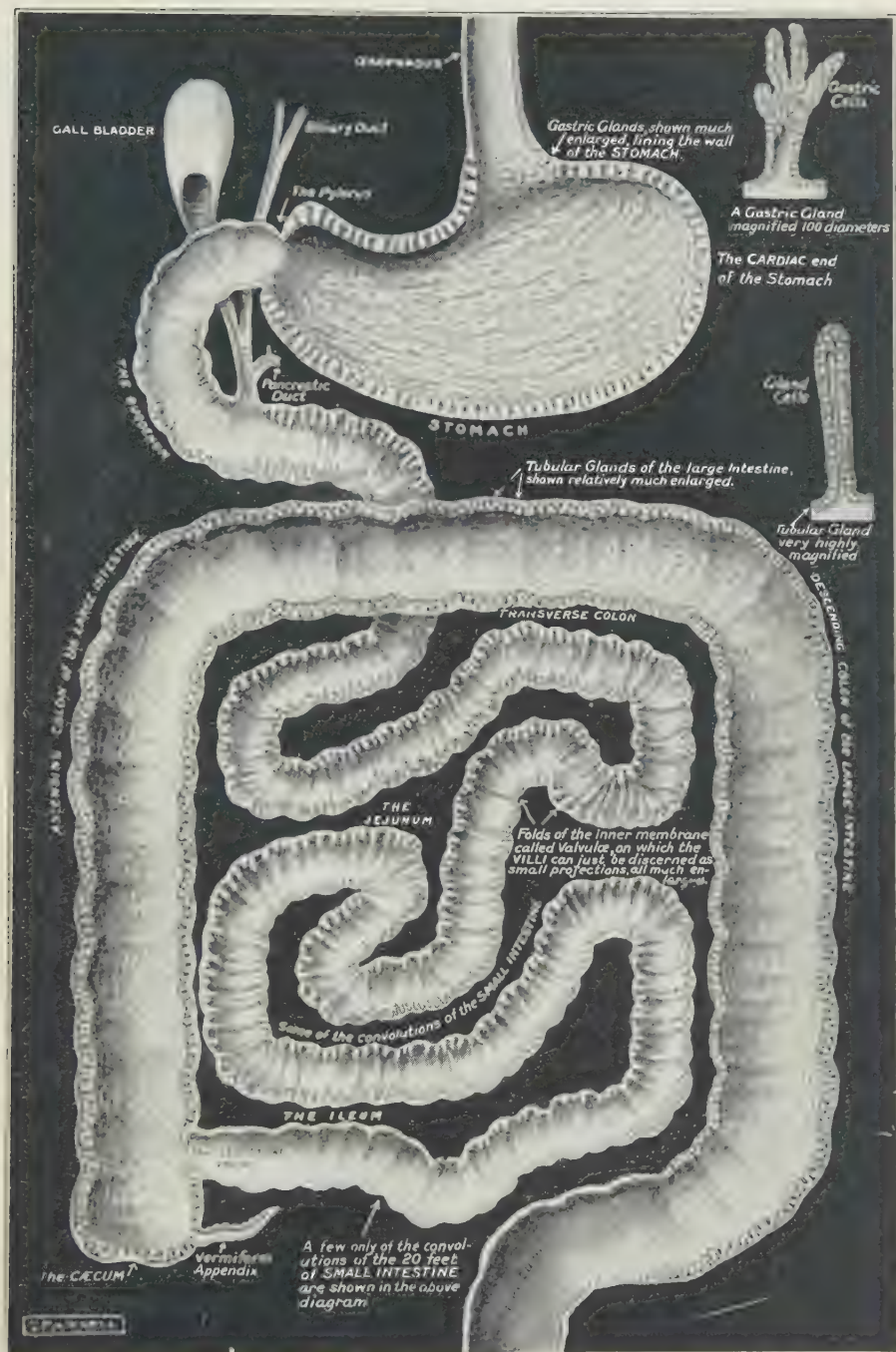
**ALMONDS, BITTER, POISONING BY.** In poisoning by the oil of bitter almonds, or cherry-laurel water, sprinkle cold water on head, face, and chest to stimulate respiration, put smelling salts to the nose, and give whisky or brandy in teaspoonsful every five or ten minutes. If the patient is seen immediately after taking the poison, give an emetic of a teaspoonful of mustard in a half-pint of water, or wash out the stomach. The patient should be kept warm with blankets and hot-water bottles until the doctor's arrival.

**ALMONDS OF THE THROAT.** A name popularly applied to the tonsils.

**ALOES.** A powerful purgative derived from a tropical plant. On account of its griping action, aloes and its extract—aloin—are usually prescribed with other drugs which moderate their action. As it acts largely on the lower bowel, aloes is of little use in constipation due to inactivity of the liver, where, of course, treatment should be directed towards stimulating this organ and the upper part of the digestive tract into more normal activity.

For people who, without being "livery," nevertheless are unable to keep the bowels in healthy regular action, daily small doses of aloes or its extract aloin often give good results.

On account of its irritating effect on the lower bowel, aloes should never be taken by people who suffer from hæmorrhoids (or piles.)



A DIAGRAMMATIC REPRESENTATION OF THE ALIMENTARY CANAL

The following is an excellent prescription for an aloes purgative pill :

℞	Socotrine aloes	..	..	..	..	24 grains
	Myrrh	..	..	..	..	12 "
	Syrup of glucose	..	..	..	..	20 drops
Make into twelve pills. Take one pill at night, when necessary.						

Another useful pill, in which the griping action of the aloes is controlled by hyoscyamus, is the following :

℞	Extract of aloes	..	..	..	..	12 grains
	Extract of nux vomica	..	..	..	..	3 "
	Capsicum	..	..	..	..	3 "
	Extract of hyoscyamus	..	..	..	..	24 "
Make into twelve pills. Take one pill after dinner at night, when necessary.						

**ALOIN.** An extract of aloes. Aloin is largely used in the formation of "dinner pills," for persons who find that they constantly require some purgative. The following is a favourite prescription :

℞	Aloin	..	..	..	12 grains
	Extract of nux vomica	..	..	..	6 "
	Extract of belladonna	..	..	..	6 "

Make into twenty-four pills. Take one at night, when necessary.



THE ALOES PLANT

Sometimes where a habit of costiveness has been brought on by lack of care in dieting, the bowels may be brought back into their former habit of regularly moving every day by taking one of the above pills daily after dinner for a month, no matter whether the bowels have moved that day or not. When once the

habit of going to stool at a fixed hour each morning has thus become acquired, it will remain, even though the medicine be discontinued.

**ALOPECIA.** Another name for baldness.

**ALOPECIA AREATA** or "**PATCHY BALDNESS**," is a disease of the hairy system in which, more or less suddenly, the scalp in round or oval patches goes perfectly bald.

The disease, although usually confined to the scalp, may also affect the beard or eyebrows. In some cases the patches may develop within a day or two ; in others the loss of hair may be spread over weeks. In children the baldness is rarely permanent, although it may be many months before the hair grows again. In grown people the bald patches may persist indefinitely.

The disease is thought to be due to some upset of the nervous system of the scalp. Shocks, sudden fright, and great worry sometimes bring on alopecia areata. Certain authorities, however, believe that the loss of hair is due to a minute parasite, one similar to that of ringworm.



**Treatment.** The doctor must be called in to prescribe some strong tonic containing iron, strychnia, or arsenic, as he sees fit after carefully considering the patient's general state of health. Much more important than the internal treatment, however, is the local treatment which the patient must carry out for himself at home. The object here is to stimulate the blood circulation about the hair roots. The following lotion, rubbed in vigorously once or twice a day, will, if persisted in for weeks, often gradually lead to a re-covering of the bald spots with a downy fur which in its turn gradually grows into normal hair.



PATCHY BALDNESS, OR ALOPECIA AREATA

R  
Castor oil . . . . . 2 teaspoonsful  
Tincture of capsicum . . 3 tablespoonsful  
Tincture of cantharides 3 "  
Cologne water . . . . . 2 "  
Apply locally twice a day.

Another highly recommended lotion (Besnier) is the following :

R  
Glacial acetic acid .. .. . 30 minims  
Chloral hydrate .. .. . 160 grains  
Ether .. .. . to make 2 ounces  
Make into a lotion. Rub well into the bald spots once a day.

Should the scalp become irritated by either of the above lotions, apply only every alternate day.

Another alternative lotion which may be given a trial should the above fail to give good results, is the following, used at the St. Louis Hospital (Douglas Guthrie) :

R  
Strong solution of ammonia 2 drachms  
Oil of turpentine .. .. . 5 "  
Spirits of camphor .. .. . 4 ounces  
Rub lotion well into bald spots once a day

**ALOPECIA AREATA in Childhood** is much more amenable to treatment than is the disease in adults. The progress of the disease may, however, be even more rapid in children, the hair literally dropping off in patches until the scalp is perhaps totally bald.



ALOPECIA AREATA, AFFECTING HAIR AT THE EDGE OF THE SCALP E

**Treatment** consists of stimulating the hair bulbs in the scalp to throw out new hairs to replace the dead ones which have dropped out. The following lotion, if used conscientiously for some weeks, often is very successful in children.

R

Tincture of cantharides	..	..	..	..	1 ounce
Ammonium carbonate	..	..	..	..	1 drachm
Rectified spirit	..	..	..	..	1 ounce
Water	..	..	..	..	enough to make 8 ounces

Rub well into the bald patches night and morning.

**ALTERATIVES** are drugs which are supposed to produce a healthy change in the body-tissues of persons who are in a low state of vitality without being actually ill. They include arsenic, sulphur, phosphorus, the iodides, some preparations of mercury, sarsaparilla, guaiacum and colchicum, etc.

**ALUM** is a powerful astringent which, rubbed on bleeding scratches, shaving wounds, etc., will stop the flow of blood. Half a teaspoonful in a wineglass of hot water is a useful emetic. In simple leucorrhœa (the whites) where the discharge is due to a general run-down condition of the patient or to anæmia, a vaginal douche morning and evening of a teaspoonful of powdered alum to the pint of warm water often gives good results.

**ALUM, Poisoning by.** Unless, as is usually the case, there has been profuse vomiting, give an emetic as soon as possible. A teaspoonful of mustard in a half pint of water is a simple yet effective emetic. When this has acted, give two tablespoonsful of castor oil.

**ALVEOLAR ABSCESS** (gum boil) is an abscess in the socket of a tooth. The symptoms are pain and swelling of the jaw and the soft parts covering it. If there is a cavity in the tooth, a tiny pledget of cotton-wool, soaked in carbolic acid inserted in it, may effect a cure. Great care should be used, in placing the carbolic acid in the tooth, not to drop any on the surrounding tissues, as it is a powerful corrosive poison. If this treatment does not succeed, the dentist should scarify the gumboil down to the bone; otherwise the abscess may open on the outside of the jaw or cheek and produce an ugly and permanent scar.

When the gumboil discharges into the mouth, the first step in treatment is to disinfect the part as speedily as possible. It should be thoroughly understood that no one can be healthy when constantly swallowing products of putrefaction either from a decaying tooth or from a discharging gumboil. The following is a useful antiseptic mouth-wash and gargle with which the mouth should be cleansed several times a day until the gumboil is completely healed.

R

Sodium bi-carbonate	..	..	..	..	1 drachm
Compound glycerin of thymol (B.P.C.)	..	..	..	..	2 ounces
Water	..	..	..	..	enough to make 6 ounces

Use the lotion as a mouthwash as directed.

Sometimes, but only rarely, the developing gumboil can be aborted by painting it several times a day with a mixture of tincture of iodine and chloroform (equal parts).

**AMAUROSIS.** Blindness usually resulting from disease of the optic nerve. Gout, syphilis, lead, tobacco, or alcohol poisoning may cause this variety of complete loss of sight.

**AMBULATORY FEVER.** A term applied to an attack of typhoid, measles, scarlet or other fever so mild that the patient continues throughout its course to move about in his ordinary way.

**AMBLYOPIA** means partial loss of vision. It may be looked upon as an early stage of amaurosis.

**AMENORRHEA** means the absence of the menstrual flow at the normal periods. The commonest causes of amenorrhœa are pregnancy, the nursing of a baby, the change of life, profound anæmia, mental shock, or a chill contracted a day or two before the expected commencement of the period. In serious wasting diseases and in cases of insanity the periods may also be irregular.

In young girls who have never menstruated the amenorrhœa is sometimes found to be due to the presence of a thin membrane blocking up the entrance of the vagina. Here relief may be obtained by the surgeon's cutting through this membrane, allowing a free escape of the blocked-up discharges. In other rarer cases the trouble may be due to occlusion of the mouth of the uterus or to congenital absence of the vagina.

**Treatment.** Where the patient is pregnant, or suckling her baby, or has passed the change of life, no treatment, of course, is needed.

Where anæmia and constipation are present, the following tonic will often quickly put matters right :

R

Aloin .. .. .	..	..	..	..	..	$\frac{1}{2}$ grain
Extract of belladonna	..	..	..	..	..	$\frac{1}{4}$ "
Extract of nux vomica	..	..	..	..	..	$\frac{1}{4}$ "
Sulphate of iron ..	..	..	..	..	..	3 grains

To make one pill. Make thirty pills. Take one pill every night at bedtime.

Where there is no constipation but the patient is in a generally run-down and debilitated state, the following bitter tonic sometimes gives good results :

R

Iron and quinine citrate .. .. .	..	..	..	..	1 $\frac{1}{2}$ drachms
Solution of strychnine hydrochloride	..	..	..	..	48 minims
Spirit of chloroform .. .. .	..	..	..	..	3 drachms
Infusion of calumba .. .. .	..	..	..	..	to 8 ounces

Make into a mixture. Take one tablespoonful three times a day in half a wineglass of water, after meals.

The patient should, of course, try to build up her general health in every way by getting more fresh air, plenty of plain, nourishing food, and plenty



of sleep at night in a well-ventilated bedroom. If her work-hours are long and arduous, and entail much standing about, she should, if possible, obtain a change of employment for a few months.

Sometimes the ceasing of the menstrual flow is a symptom of some serious wasting disease, such as Bright's disease of the kidney, consumption, or malnutrition following on gastric ulcer, chronic indigestion, or cancer in the stomach. In all cases, therefore, when the absence of the menstrual flow cannot be readily accounted for, a physician should be consulted without delay.

In some cases the mere change from one locality to another may temporarily (for a few months) cause a cessation of the normal menstruation. These cases call for no treatment, as the abnormality is due to the body's temporary difficulties in adapting itself to its new surroundings.

**AMMONIA.** Prepared from quicklime and sal-ammoniac which, after being thoroughly mixed, are raised to a high temperature. The resulting fumes are ammonia.

Sopped on midge bites and wasp stings, etc., ammonia often greatly reduces the irritation. The vapour when inhaled is a strong heart stimulant, and at the same time increases the breathing rate. Sal-volatile, a common name for aromatic spirits of ammonia, is often given (a teaspoonful in half a glass of water) in shock to prevent fainting. In **ammonia poisoning** give vinegar and water, half and half, to neutralise the action of the alkali.

**AMNESIA.** The Greek word for "forgetfulness."

**AMNION.** The fibrous membrane which lines the womb during pregnancy. It holds a quantity of fluid, and forms the "bag of waters" which bursts before the birth of the child.

**AMCEBA.** A minute parasite which is the cause of a form of dysentery prevalent in Egypt, India, and other hot countries. It is also the name of one of the lowest forms of life, consisting of a microscopic mass of protoplasm with a nucleus—the "primeval slime" of the geologists.

**AMPUTATION.** Is the term applied to the removal of a limb or part of a limb, by cutting through the skin, muscles, and bones. When a limb is removed by cutting through the tissues surrounding a joint, the name disarticulation is given to the operation.

The conditions which call for an amputation are (1) severe injuries, which crush large portions of skin, muscle, or bone, or cut through important nerves and blood vessels. (2) A diseased state of the limb, such as gangrene, malignant tumours, incurable ulcers, and many forms of disease of the joints or bones.

After injury an amputation may be performed immediately, when it is called "primary," or it may be delayed for some time, when it is called "secondary."

Shock, hæmorrhage, and sepsis (or blood-poisoning), are the three chief complications which attend amputations. Dangerous shock, for example, may follow disarticulation of the lower limb at the hip-joint, or any severe operation



AN AMPUTATION IN THE 18TH CENTURY  
From an engraving in Heister's "General System of Surgery," 1743



A MODERN CONTRAST: AN OPERATION CARRIED OUT BY LADY DOCTORS  
See also the pictures of operating theatres in London Hospitals on page 77

in weakly, old, or very young subjects. Both dangerous hæmorrhage and sepsis are now rare, the latter being almost unknown in simple amputations under the modern aseptic treatment.

**AMYL NITRITE**, an oily liquid, with a characteristic odour something like bananas, used in medicine for relieving spasms, and for dilating contracted blood-vessels. The drug is usually prescribed in small flasks of very thin glass, one of which may be crushed in the handkerchief, so that the resulting vapour may be inhaled. In certain heart conditions accompanied by great pain (*See* **ANGINA PECTORIS**) amyl nitrite often gives immediate relief. This very powerful drug, of course, should never be used except in accordance with the attending physician's prescription.

**AMYLOID DISEASE**, also known as waxy, or lardaceous disease, is a condition in which certain of the tissues which make up the glands and the blood-vessels of the various organs degenerate into a waxy substance. It is rarely met with except in long-standing and advanced cases of tuberculosis, syphilis, or chronic abscess.

The condition requires no treatment beyond that of the disease during which it occurs. If the patient recovers from his major ailment, the organs and vessels which have been undergoing amyloid degeneration soon regain their normal consistency.

## ANÆMIA

There are three main types of this disease, (1) Simple, benign anæmia, or "poorness of blood," (2) the primary anæmias which are distinct diseases in themselves, and (3) the secondary anæmias, the direct result of some other disease or condition.

### **SIMPLE BENIGN ANÆMIA, or "POORNESS OF THE BLOOD."**

One of the commonest conditions to be met with in city workers and others who live indoor sedentary lives, is a mild type of anæmia, which does not come under the head of Chlorosis, or Pernicious Anæmia, nor can it be described as one of the secondary anæmias arising from hæmorrhage, chronic discharges, cancer, gout, syphilis, etc.

This simple anæmia is a very common ailment, particularly in the spring and autumn, among young people who live or work in dark, ill-ventilated homes, offices or factories, who get too little exercise, have only poor or insufficient food, and whose physical state is, as a direct result, temporarily run down.

**Symptoms.** The chief outward sign is an unnatural pallor, usually not intense, but showing itself as a decrease from the normal pink tinge of health. The lips, instead of being bright scarlet, are duller in hue. The tiny fleshy mass filling up the inner angle of the eyelids may be nearly pearly white,



instead of the normal deep pink. Generally the patient is below weight, his appetite is capricious, he is more or less mentally depressed, and perhaps notices his temper is a bit shorter than usual. He complains of always feeling more or less "slack," and says his night's rest appears to do him no good. He is as tired on getting up in the morning as when he went to bed. The slightest exertion, such as running up stairs, or even walking fast, makes him short of breath. A tendency to headaches and slight palpitation of the heart are other common symptoms.

Simple anæmia, or "poorness of the blood," attacks men and women alike and at all age periods, though it is commonest between early adult life and middle age.

The outlook is entirely favourable if the causes (lack of sunshine, too little exercise, poor food, etc.) can be removed.

**Treatment.** One of the most important essentials in treating this type of anæmia is that over-fatigue of all kinds must be avoided. Whether the patient is a brain worker or, as is much more rare, a worker with his hands, the amount of his daily labours must be cut down. He should go to bed earlier, and get up a little later, and, in addition, should, if possible, try to get half an hour to an hour's rest in the afternoon. In most cases this latter prescription is an utter impossibility, but where it can be carried out the resultant extra time for recuperation afforded to the blood-making mechanism of the body will be found to have an appreciable effect in hastening the return to health.

Simple anæmia may be taken as a warning that the patient is not getting enough fresh air and sunlight, Nature's two most powerful blood-tonics. If the case is severe enough to necessitate the patient's temporarily giving up his work, the whole day, if possible, should be spent in the open air. If a sleeping shelter can be arranged in the garden so much the better, for then the patient, both during his afternoon nap and throughout the night hours spent in sleep, may be breathing in a maximum of the health-giving fresh air. If he must continue at his occupation, he should, at any rate, see that his office or workroom windows are wide open.

As to diet, the rule is that an abundance of nourishing blood-forming food should be eaten, but at the same time great care must be taken not to upset the digestion, often very unstable in these cases. Plenty of milk (two to four pints a day), eggs, cream, butter, oatmeal, bacon, suet puddings, rice and sago puddings, and sweet and fattening foods in general should be taken, and at least one red meat meal a day. Alcoholic beverages are usually quite unnecessary. The popular superstition that a glass of red wine, burgundy or claret, at meals helps to produce red blood, has no scientific foundation. In some cases, however, where the patient is generally run down, a tablespoonful or two of well-matured whisky in a little water at lunch or dinner may have a stimulating effect. The grave risk of such alcoholic stimulants becoming a

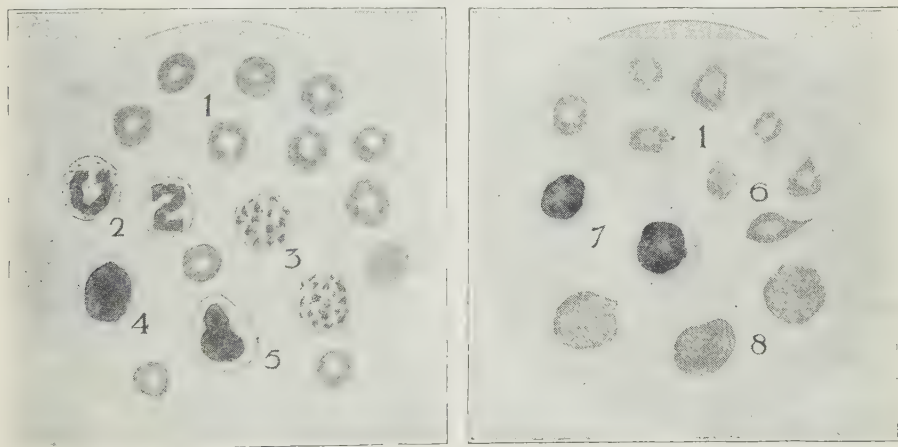


The **PRIMARY ANAEMIAS** are (1) Chlorosis, or "Green Sickness," and (2) Pernicious Anæmia.

**CHLOROSIS** is a blood disease most frequently found in young women or in girls just approaching adult life. It is considered to be due to some abnormality in the formation of the blood, the chief deficiency being in the hæmoglobin, or colouring matter in the red blood-cells.

Practically never fatal of itself, it runs a mild course, getting worse at times and then better, sometimes almost disappearing, only to return again. A cure in time is practically always certain under proper treatment.

**Symptoms.** Not infrequently the sufferer is plump, or even fat, instead of being, as one might expect, thin and visibly run down. In complexion she may be pale, or even with a healthful-looking pink colour; but in typical cases the face has a yellowy-greenish tinge, which gives the disease its common



ANÆMIA IN ITS FATAL FORM: BLOOD CELLS IN HEALTH AND PERNICIOUS ANÆMIA

In pernicious anemia the blood cells themselves degenerate. The red cells may be reduced by as much as 70 per cent., while special types of blood cells may be present in abnormal numbers. This is shown in the above diagrams, that on the left being normal blood with a good proportion of red cells (1) and other healthy cells (3, 4, 5); the diagram on the right depicts blood in pernicious anemia. The red cells (1) are much reduced in number, some are changed in shape (6) while abnormal cells (7 and 8) make their appearance.

name, "green sickness." While the disease is not at all uncommon in young women, it is very rare indeed (if it ever occurs at all) in the male sex.

Heredity seems to play an important part in the causation of chlorosis. Frequently a history can be obtained of the mother or an aunt having suffered from the disease in her youth.

As likely to predispose to chlorosis may be mentioned such unhygienic conditions as bad air, dimly lighted rooms, a lack of nutritious food and outdoor exercise, a sedentary occupation, hasty and irregular meals, excessive tea and coffee drinking, irregular and insufficient hours of rest and sleep, bodily fatigue, as from stair-climbing and standing in constrained positions without intervals of rest (Anders). On the other hand, girls surrounded by the greatest luxury, and living apparently under most hygienic conditions, frequently develop chlorosis.



Prolonged mental strain, worryin gemotions, such as an unfortunate love affair, home sickness, and jealousy are other causes. In some cases the simple change from an outdoor country life to an indoor city life seems sufficient to bring on the disease.

The disease comes on very gradually, perhaps the first symptom noted by the patient being a growing lack of energy and a constant tiredness. The sufferer puts off doing the commonest everyday tasks because she feels that they will overtire her. Headache and dizziness are other early symptoms. In other cases the patient may first complain of shortness of breath on walking upstairs or on any other slight physical exertion. Other very common early symptoms are heart palpitation, indigestion, and constipation.

Generally the appetite is poor. The patient comes to dislike ordinary dishes, and may develop an abnormal fondness for out-of-the-way, highly spiced foods, such as pickles and other vinegary or very salty articles. Sometimes she complains of a pronounced feeling of fulness after meals and flatulency. The nails may be pale or bluish, and the whites of the eye a bluish-white instead of the normal colour. Frequently the pulsation of the neck vessels may be seen, and sometimes the physician may be able to detect a blowing sound over the heart. Ringing in the ears, hysteria, facial neuralgia, and mental depression are among the nervous symptoms sometimes noted.

The heart is usually more or less temporarily reduced in its pumping efficiency, producing, perhaps, swelling of the ankles, which is a fairly constant symptom in this disease.

**Diagnosis.** Although the diagnosis can very frequently be made from the symptoms as described above, the only way to make certain is to have the blood examined by a competent physician. The characteristic condition in chlorosis is a noticeable decrease (perhaps from 30 to 70 per cent) in the amount of red colouring matter in the blood, although the actual number of the red cells themselves is practically normal.

The outlook is always favourable, a cure being obtainable in practically all cases if suitable treatment is conscientiously carried out. Relapses, however, are common if treatment is discontinued too soon. The disease may last from six weeks to three or four months.

**Treatment.** The essentials of treatment in a case of any great severity are absolute rest in bed for three or four weeks, an easily digestible iron tonic, and a thorough overhauling of the diet.

If the patient insists on keeping up and about, the iron, in no matter what form administered, frequently fails to effect a cure. During the confinement to bed the patient should be on a very light diet. For the first few days milk and milk puddings, etc., raw eggs, and nourishing soups should make up the whole daily menu. Later, as all symptoms of dyspepsia disappear, chicken, boiled fish, and scrapings of underdone broiled steak may be gradually added.



TWO WARDS IN ONE OF LONDON'S GREATEST HOSPITALS  
Photographs taken at St. Bartholomew's Hospital

Constipation, if present, must be set right before any cure can be hoped for. A teaspoonful of equal parts of confection of sulphur and confection of senna at bedtime will usually accomplish this.

Only when the bowels have been got into regular working order should the iron be commenced. The following mixture will act directly on the blood, at the same time keeping in check the tendency to constipation.

℞	Quinine sulphate	..	..	..	..	16 grains
	Sulphate of iron	..	..	..	..	16 "
	Magnesium sulphate	..	..	..	..	1 ounce
	Dilute sulphuric acid	..	..	..	..	1 drachm
	Peppermint water	..	..	enough to make	..	4 ounces

Take two teaspoonsful in a glass of water three times a day, after meals.

Another excellent remedy is freshly made Blaud's pills in gradually increasing doses. Any chemist can supply these. It is usual to begin with one three times a day after meals, and then gradually increase by one pill per day until finally four are taken after each meal, making twelve for the whole day. Iron in this or other forms should be continued for at least two months before a cure can be hoped for.

Sometimes it is found that after a few doses of iron (no matter in what form prescribed) the patient develops indigestion symptoms as a result of the drug's action.

Here the tonic should be dropped for a time, and the following mixture substituted.

℞	Sodium bi-carbonate	..	..	..	..	15 grains
	Bismuth subcarbonate	..	..	..	..	10 "
	Aromatic spirits of ammonia	..	..	..	..	10 minims
	Infusion of calumba	..	..	..	..	$\frac{1}{2}$ ounce

To make one dose. Take in equal quantity of water a quarter of an hour before meals.

When indigestion symptoms have passed off, begin again with the iron, half doses at first, gradually increasing up to full dose.

Fresh air and sunshine have an important rejuvenating effect on the blood, so the patient's bed should be wheeled into the sunlight whenever possible, and her bedroom should be well ventilated at night.

**PERNICIOUS ANAEMIA** is a very severe blood disease in which there is an active degeneration of the blood cells themselves.

The disease is one of the most intractable the physician has to treat, and too often, despite his utmost efforts, the patient steadily gets worse and worse (though there may be temporary improvements), until the fatal termination is reached.

**Causes.** As a general rule, no cause can be found for the progressive blood destruction which constitutes the disease. In some cases, however, prolonged





THE OPERATING THEATRE AT THE LONDON HOSPITAL



THE OPERATING TABLE AT ST. BARTHOLOMEW'S HOSPITAL

and high fever, severe hæmorrhages, chronic and profuse diarrhœa, or (very rarely) pregnancy may seem to lead up to a true pernicious anæmia.

Whereas chlorosis is practically confined to girls and young women, pernicious anæmia is much more frequent in men, and is commonest at about middle age.

**Symptoms.** As a rule, a gradually increasing pallor of the skin, together with slight palpitation of the heart and shortness of breath on exertion, are the first symptoms noticed. The patient may say that for months past he has felt vaguely below par. Sometimes headache, dizziness, and ringing in the ears are early symptoms.

As the disease progresses the patient becomes weaker and weaker, and the skin assumes a waxy white or pale yellowish tinge, characteristic of the disease.

Despite the destructive changes in the blood and the resulting great prostration and weakness, the patient is rarely emaciated. Gastric symptoms such as sickness, vomiting, indigestion, and diarrhœa may develop, adding to the patient's discomfort. There may be a slight degree of fever, chiefly in the afternoons.

The examination of the blood shows that the red cells are anywhere from 40 to 70 per cent. below the normal. The red colouring matter in each cell, however, instead of being decreased as in chlorosis, may be above the average. Special types of blood cells may be present in abnormal numbers and proportions. (See illustration on page 73).

Complete recovery is very rare, though numbers of cures have been reported. Generally the progress is steadily downhill, though there may be long periods of marked improvement, which may be mistaken for complete recovery. The course of the disease may be anywhere from three or four months to a year or more.

**Treatment.** The patient, of course, must be confined to his bed, and the greatest care should be taken that the bowels be kept in regular working order, and that the diet be light and easily digestible. (See CHLOROSIS *above*).

Just as iron is the physician's sheet anchor in chlorosis, so arsenic is in pernicious anæmia. The drug is usually given in gradually increasing doses of Fowler's solution, three or four drops three times a day after food. At the end of the week the dose may be increased by one drop. This increase may be repeated at two or three days intervals (unless the patient develops signs of stomach irritation), until he is taking fifteen or twenty drops in a wineglass of water three times a day.

Bone marrow sandwiches, prepared by spreading raw, red bone marrow on bread, sometimes give good results. If the patient has little or no appetite,

and cannot be tempted to take his food, a bitter tonic such as the following may be given a quarter of an hour before each meal:

℞	Compound tincture of cardamoms	.. ..	1½ drachms
	Concentrated compound decoction of sarsaparilla		2 ounces
	Spirit of chloroform	.. ..	1½ drachms
	Tincture of calumba..	.. ..	4 "
	Water	.. .. enough to make	6 ounces
	Take a dessertspoonful fifteen minutes before each meal.		

In favourable cases when the patient appears to pick up on the arsenic treatment, iron in the form of one or two grains of Blaud's pill may be given three times a day in addition to the arsenic.

**THE SECONDARY ANÆMIAS.** The chief causes here are loss of blood, cancer, advanced kidney disease, intestinal parasites, lead poisoning, and chronic disease such as rheumatism or gout, typhoid fever, tuberculosis, gastric ulcer, or syphilis. Nursing an infant too long is another cause in young mothers. The blood changes here are similar to those in chlorosis in that the hæmoglobin or colouring matter is deficient, but at the same time the total number of blood cells is also greatly reduced.

**Treatment.** Before any cure of the anæmia can be expected, the cause must first be sought out and removed. If this is possible the anæmia will pass off by itself under the influences of plenty of fresh air and rest, an iron tonic, suitable food, and general attention to the ordinary laws of health. Apart from the treatment of the causative disease, iron is the only drug needed. This is best given in the form of Blaud's pill, or in the mixture as suggested above for chlorosis.

The acid preparations of iron, such as the perchloride, often have an injurious effect on the teeth, and are no more efficacious than the Blaud's pill.

During convalescence from anæmia of any kind a stay at the seaside, or at some spa where baths and massage can be combined, will often hasten the cure.

**ANÆMIA IN CHILDREN** is a much more common complaint than most mothers realise. After any of the acute fevers of childhood severe anæmia may persist for months. Lack of fresh air and sunshine, too little outdoor exercise, and rapid growth in the child are other common causes.

**Treatment.** While an iron tonic is an important part of any treatment, it is by no means a cure-all in these cases. It is equally essential to find out and remove the cause of the deficiency in the blood. Sometimes a tendency to rickets or chronic constipation may be the source of the anæmia.

In many slight cases more play outdoors, less study or other brain activity indoors, more sleep, and a simpler and more nourishing dietary may be all that is needed to effect a cure.



When there is a suggestion of rickets, raw beef juice or scraped steak should be given twice a day, in addition to the dietary, etc., recommended under RICKETS. When there is constipation combined with anæmia, the following iron mixture may be given with advantage :

℞

Sulphate of iron	..	..	..	..	10 grains
Sulphate of magnesium	..	..	..	..	2 drachms
Dilute sulphuric acid	..	..	..	..	1 drachm
Syrup	..	..	..	..	1 ounce
Water	..	..	..	..	to make 3 ounces

Give two teaspoonsful three times a day, after meals.

When the anæmia follows on the convalescence from some acute disease, minute doses of strychnia may be added to the iron, as in the following :

℞

Compound syrup of the hypophosphites (B.P.C.)	1 ounce
Water	5 ounces

Dose for child of ten, two to four teaspoonsful three times a day, after meals.

Bone marrow may be added with advantage to the iron in many cases. The following mixture is suitable for a child of ten or twelve years :

℞

Glycerine extract of red bone marrow	..	..	1 ounce
Compound syrup of ferrous phosphate	..	..	1 "
Liquid extract of malt	..	..	1 "

Two teaspoonsful in a little water, three times a day, after meals.

For children under six, a half-teaspoonful.

The diet on which literally millions of children are brought up on in this country—bread and butter, cakes, sweet foods, potatoes, and other starchy vegetables, with tea several times a day, is in itself enough to induce anæmia of more or less severity. Bad teeth and the resulting constant pouring out into the mouth of "matter" or pus (which is swallowed and so tends to interfere with the digestion) are other not uncommon causes of anæmia in childhood.

Below is a diet sheet suitable for a child of eight suffering from mild anæmia (Chalmers Watson).

*Breakfast.* Bowl of porridge, gruel, or other cereal ; milk, 10 ounces ; slice of bread and butter, or toast and butter, or oatcake.

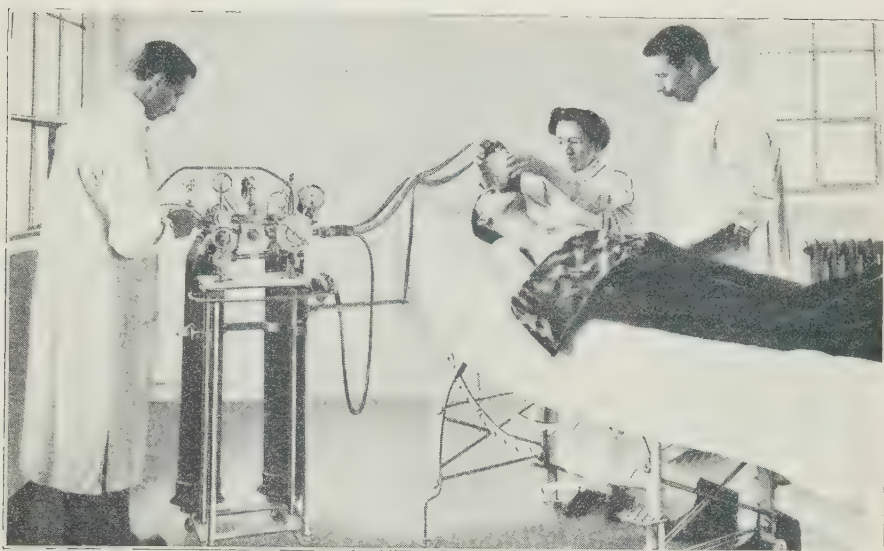
11 *a.m.* Cup of clear soup (8 oz.), to which has been added  $\frac{1}{4}$  lb. of scraped raw meat ; or

Cup of soup (8 oz.), thickened with yolk of egg and a little milk ; a biscuit.

1 *p.m.* A good two-course dinner, the meat being plainly cooked. Fish or chicken, or meat, potatoes, and a vegetable. Light milk pudding, or a custard, or a custard and stewed fruit.

4.30 *p.m.* A good, wholesome tea, plenty of milk to drink, toast, occasionally a piece of plain cake or a biscuit, butter, and a little jam or jelly. Bread foods should not be new.

*Bedtime.* A cup of soup ; or a cup of peptonised cocoa or milk.



A FRENCH APPARATUS FOR CHLOROFORM ANÆSTHESIA

A method introduced by a French scientist for the safe and regular administration of chloroform.

**ANÆSTHETICS** are drugs used to diminish or to do away entirely with sensibility to pain. The commonest general anæsthetics (that is, those which cause loss of consciousness) are nitrous oxide gas, ether, chloroform, and mixtures of chloroform and ether. The "A.C.E." mixture is composed of one part alcohol, two parts chloroform, and three parts ether. Nitrous oxide gas may be used alone, or mixed with oxygen.

Cocaine, eucaïne, novocaine and stovaine are local anæsthetics which do away with or diminish sensibility to pain without causing loss of consciousness.

**Nitrous oxide gas**, or "laughing gas." This anæsthetic is suitable in minor operations, such as the extraction of teeth, opening abscesses, and short operations where it is not essential that the patient's muscles be absolutely relaxed. It is unsuitable in cases where there is much swelling or engorgement of the neck and upper air passages (as in Ludwig's angina), in advanced heart disease, and in operations on the rectum.

Used with proper precautions and in suitable cases it is one of the least dangerous of the general anæsthetics, and has the added advantage that it rarely causes the vomiting which is so common after ether.

**Nitrous oxide gas and oxygen** are frequently given combined, in place of simple gas, in the same class of operation, and also for operations of somewhat longer duration. This mixture has practically no unpleasant after-effects, and is the safest anæsthetic known. Laughing gas and oxygen is not a suitable anæsthetic where the patient is a very hard drinker or very muscular subject. In vaginal examinations and operations on the rectum it is not suitable, because it does not produce sufficient relaxation of the muscles.

**Ether** may be administered either by the open method, the closed method, or the intravenous method. In the open method, the ether is simply poured drop by drop on a bit of gauze held over the patient's mouth and nose; in the closed method the ether is contained in a metal receptacle with a mouth-piece and air-bag attached. The mouth-piece is placed over the patient's nose and mouth, and the anæsthetist regulates the amount of ether and air vapour which the patient breathes in and out.

Ether may also be given intravenously—that is to say, ether is mixed in certain definite proportions with normal saline solution, and is then injected into a vein. This method is particularly suited to people who have lost a large amount of blood, or who are in a very collapsed state.

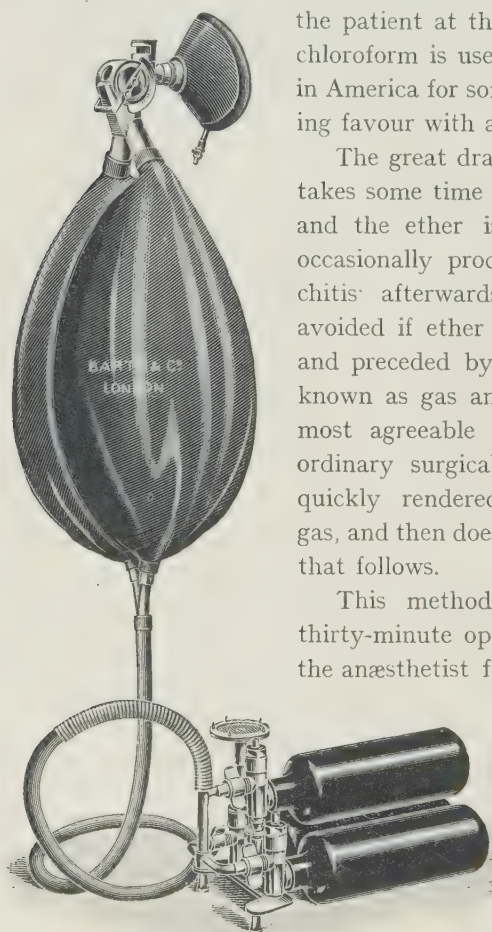
The open method of administering ether is the safest method for those who only administer anæsthetics occasionally; there is much less danger to the patient at the time of the operation than when chloroform is used. This method has been in vogue in America for some time, and is now gradually gaining favour with anæsthetists in Great Britain.

The great drawbacks to this method are that it takes some time to render the patient unconscious, and the ether is very unpleasant to smell, and occasionally produces ether pneumonia and bronchitis afterwards. These drawbacks are mostly avoided if ether be given by the closed method, and preceded by nitrous oxide gas. The sequence known as gas and ether is perhaps the safest and most agreeable way of producing anæsthesia for ordinary surgical operations, for the patient is quickly rendered unconscious with the laughing gas, and then does not either taste or smell the ether that follows.

This method is usually employed for about thirty-minute operations; for those lasting longer, the anæsthetist frequently changes from the closed

method to either open ether, or chloroform or some mixture containing chloroform.

By this procedure, the risk of a subsequent bronchitis or pneumonia developing is greatly lessened, and the disagreeable after-effects of the ether, vomiting, etc., are reduced. While



APPARATUS FOR NITROUS OXIDE AND OXYGEN INHALATION



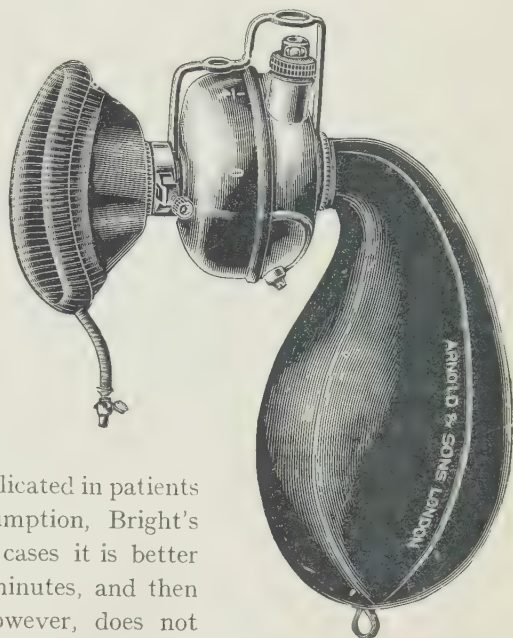
ether is undoubtedly a safer anæsthetic than chloroform, it has the great disadvantage of practically always causing a certain amount of vomiting after the operation is finished. Occasionally, it also brings on a severe bronchitis, or even pneumonia.

Less dangerous but still unpleasant aftermaths of ether anæsthesia are the taste and smell of the drug, which may persist for many hours. A long ether anæsthesia is contra-indicated in patients suffering from bronchitis, consumption, Bright's disease, and diabetes. In such cases it is better to give gas and ether for a few minutes, and then change to chloroform. This, however, does not apply to diabetes, for which condition gas and oxygen is perhaps the best anæsthetic.

**Chloroform** should *not* be given to induce anæsthesia, except by the most experienced anæsthetist. Five times as many deaths occur with chloroform as when ether is used, and it has been shown that the majority of these deaths occur before the patients have become unconscious—that is to say, they occur in the struggling stage, and for that reason many anæsthetists strongly advise that all patients should be rendered unconscious either by ether alone or preferably by gas and ether. If it is then necessary to give chloroform, it can be given with far greater safety than if it is used from the beginning.

There is always, even with the skilled anæsthetist, a certain amount of risk of heart failure when chloroform is used from the start, and for this reason it is safer to begin with gas and ether, or ether alone.

The breathing of a patient under chloroform is quiet, like ordinary sleep, and for this reason many surgeons prefer it to ether, as the movements of the abdomen are less marked, and so it is easier to perform the operation ; moreover, the abdominal muscles are more relaxed under chloroform, and this, too, is a great help to the surgeon. Another advantage of chloroform is that it is followed by less vomiting than ether, a matter of great importance in operations on the abdomen and intestines, when violent vomiting and retching may tear out stitches. When the vomiting does occur, it is usually more prolonged than with ether.

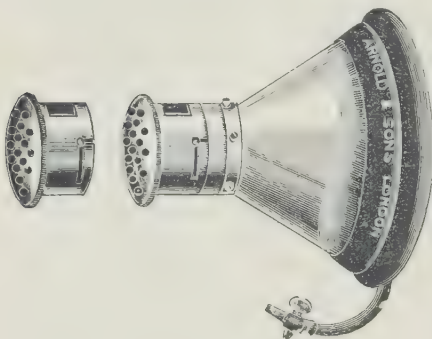


AN ETHER BAG AND INHALER

**Ethyl chloride** is sometimes used as a local anæsthetic for opening small abscesses, etc. Sprayed on the part in a fine stream; it freezes and so numbs the nerves in the skin that an incision can be made with little or no pain.

Ethyl chloride is also sometimes used as a general anæsthetic in minor operations, such as dental cases and the removal of tonsils or adenoids. Whilst it is fairly safe in the hands of an experienced anæsthetist, numerous accidents have occurred from its use. When skilfully administered, it is a reliable anæsthetic for minor operations on alcoholic subjects (who sometimes struggle violently, and are anæsthetised only with great difficulty when other drugs are used), for the aged and feeble, and for children.

The "**A.C.E.**" mixture, made up of one part alcohol, two parts chloroform, and three parts ether, is, as a general rule, the best anæsthetic for operations on children under ten or twelve years of age. Sometimes chloroform and ether mixture (the "**C.E.**" mixture) is used without the addition of the alcohol which many anæsthetists consider to be generally unnecessary.



AN INHALER FOR CHLOROFORM

Neither the "**A.C.E.**" mixture nor the "**C.E.**" mixture possess any advantage over the more commonly used combination of anæsthetics, viz., gas for the first minute or two (to bring about loss of consciousness speedily and easily), ether for the next half-hour of the operation, and then, if the operation is to be prolonged after that time, chloroform until its conclusion.

**Cocaine, novocaine and eucaine**, hypodermically injected through a hollow needle, bring about a temporary loss of sensibility to the part, and are, therefore, frequently used in small operations such as the extraction of teeth, removing moles, etc., but great caution must be exercised in the use of cocaine, as several fatal cases have followed its use. Novocaine and eucaine are much safer.

**Stovaine and novocaine** are spinal anæsthetics sometimes used in operations on the legs or lower part of the trunk, when, on account of heart disease, lung trouble, or other cause, it is inadvisable to subject the patient to a general anæsthetic. The doses for an adult are 5 centigrammes of stovaine sulphate or  $\cdot 1$  to  $\cdot 15$  grammes of novocaine. When these drugs are injected into the spinal canal through a hollow needle inserted between the vertebræ, complete loss of sensibility in the legs and lower part of the trunk follows, although the patient retains perfect consciousness and clearness of mind. Vomiting and severe headache, persisting for hours, follow in some cases; in others, the patient feels no after-effects at all.



THE ADMINISTRATION OF ANÆSTHETICS

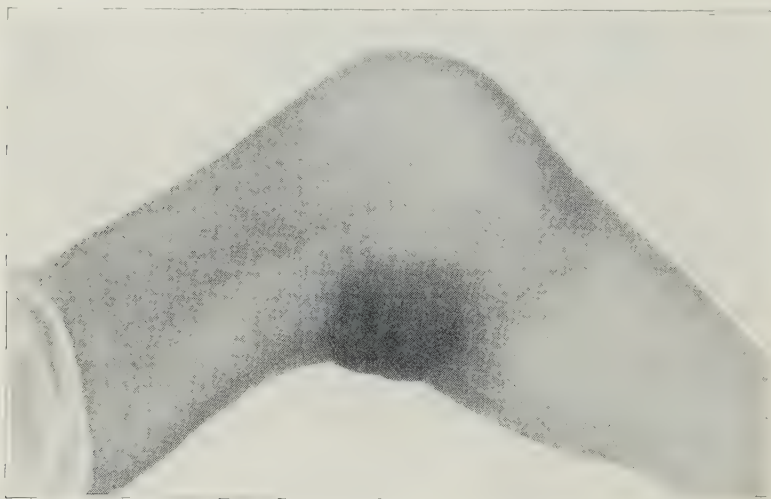
In the top photograph chloroform is being administered on lint over the mouth. At the bottom are shown the administration of gas and ether mixture (on the left), and plain gas (on the right).



While spinal anæsthesia is sometimes of great service to the surgeon in cases where a general anæsthetic would be dangerous to life, it is not yet fully proven that permanent paralysis of the limbs may not occasionally develop as a result of stovaine or novocaine anæsthesia, even years afterwards. The use of these drugs, therefore, is at present confined by most surgeons to those cases where anæsthesia by other means is more than ordinarily dangerous. the spinal anæsthetic being adopted only as the lesser of two dangers.

**ANALGESIA** means loss of the sense of pain, a condition which may be produced by analgesic drugs such as cocaine, eucaine, etc., or by certain diseases—leprosy, locomotor ataxy, etc.

**ANALGESICS** are drugs which produce insensibility to pain. General anæsthetics do this by their action on the brain, the loss of the sense of pain being accompanied by loss of consciousness. Analgesics proper are those measures used to destroy sensation locally, without affecting consciousness. They include cocaine and eucaine, etc., which are injected under the skin for



AN ANEURISM OF THE LARGE ARTERY AT THE BACK OF THE KNEE

From a drawing in St. Bartholomew's Hospital Museum.

small operations. Freezing by means of ether or ethyl chloride spray, is another analgesic measure used in opening abscesses, removing small tumours.

**ANASARCA** is general dropsy, in which fluid accumulates in the cellular tissues throughout the body.

**ANASTAMOSIS** is a term applied to the communication of blood-vessels with one another forming a fine network. The advantage of this arrangement is that if one or more arteries are blocked or destroyed, the circulation to the part is taken up by other members of the network.

**ANATOMY** is the branch of medical science concerned with the structure of the body. It is studied by dissection, in which the student



POSITION WHEN LOOKING FOR THE PULSATION OF AN ABDOMINAL ANEURISM  
 In abdominal aneurism the patient may not be aware of his dangerous state owing to there being no noticeable swelling.

acquires knowledge of the position, size, shape, etc., of the various internal organs, the muscles, nerves, vessels, bones, and all other structures of the body.

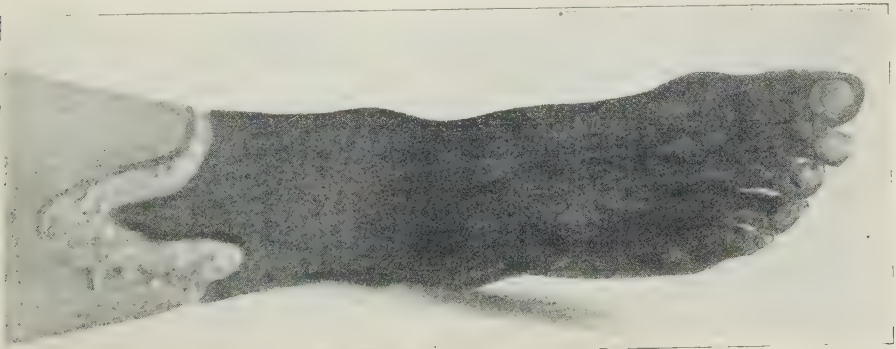
"Comparative" anatomy is the anatomy of the lower animals, that of man being called "human" anatomy.

**ANEURISM** is a swelling of an artery due to a breaking down of the inner coats of the vessel's walls, and the gradual dilatation of the remaining coats due to the pressure of the blood within.

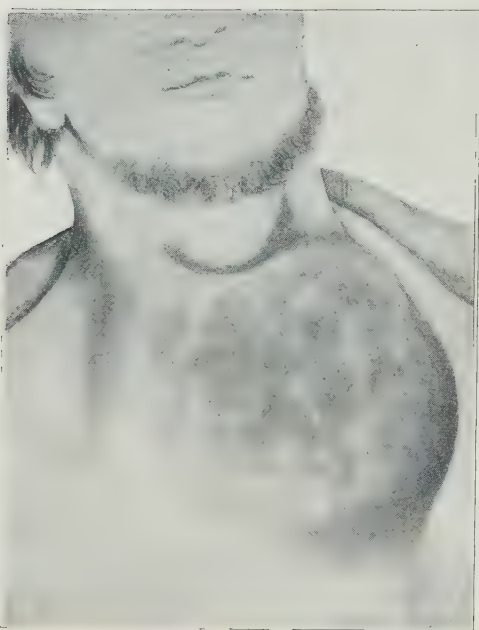
The great danger of aneurism lies in the risk of the injured vessel bursting under any sudden rise of blood pressure such as might result from running after a train or climbing a steep hill.

The diseases which are most apt to lead to degeneration of the artery linings are chronic alcoholism, syphilis, chronic kidney diseases, blood poisoning, and gout.

The symptoms depend on the position and size of the aneurism. If in a leg or arm, or in any place near the surface, the patient may notice a round



GANGRENE OF THE FOOT RESULTING AFTER TYING AN ARTERY FOR ANEURISM  
 From a case at St. Bartholomew's Hospital.



SWELLING DUE TO ANEURISM OF THE AORTA  
From a case at St. Bartholomew's Hospital.

swelling, in which he can feel a pulse-beat when he lays his finger on it. There is rarely any pain in limb aneurism unless the tumour presses against a nerve.

When the aneurism is in the abdomen or chest, and there is no pulsating swelling noticeable, there may be nothing to warn the patient of his dangerous state of health. On the other hand, there may be continuous pain or breathlessness from an aneurism pressing on a nerve or against the windpipe.

There may be a sharp, metallic cough or huskiness due to pressure on nerves connected with the throat. Inequality of the pupils and unequal pulses at the wrists are other common

symptoms. Aneurism is commonest in men of middle age who have lived hard, active lives, taking much physical exercise. Sometimes an aneurism results from direct injury to a vessel.

**Treatment.** The first step is to re-arrange one's life so as to avoid all sudden physical exertion, mental strain, and worry as much as possible in the future. At the same time, active measures should be taken to reduce the force of the heart-beat, and to encourage the laying down of layers of fibrous tissues within the aneurism to strengthen its weakened walls.

Alcohol, strong tea, and coffee must all be given up as they are heart stimulants, and by increasing the force of the heart-beat increase the tendency of the aneurism walls to burst.

The patient should be put to bed and kept there for three months. On no account should he be allowed to get out of bed even for a moment, or raise himself into a sitting posture. To reduce the activity of the heart further the patient must make up his mind to adhere strictly for the next few weeks to the following almost starvation diet:

Morning and evening he may have three ounces of strong broth, or of soup made with milk and four ounces of scraped meat, white fish, or chicken, bread and boiled or steamed vegetables. At noon the liquids and solids may be doubled. After a month the amounts may be very gradually increased until the patient takes 18 oz. of fluid nourishment and 24 oz. of solids per day.



If the patient cannot restrict himself to this very severe diet, a raw or lightly boiled egg, a little boiled rice, or a small helping of some farinaceous pudding may be added. However, the patient must be made to realise that the whole virtue of the treatment lies in so reducing the work of his heart (both by lying still, and by practically starving) that a clot may gradually form in the weakened sac of the aneurism which, if not disturbed and allowed to develop into dense fibrous tissue, will greatly strengthen the injured vessel.

During all the three months the patient is undergoing his cure, iodide of potassium, beginning with 10 grain doses three times a day after meals, and increasing up to 15 grains three times a day, should be given. The drug should be taken in a half tumblerful of water. No more drinking water should be given than is absolutely necessary. The following mixture will be suitable here :

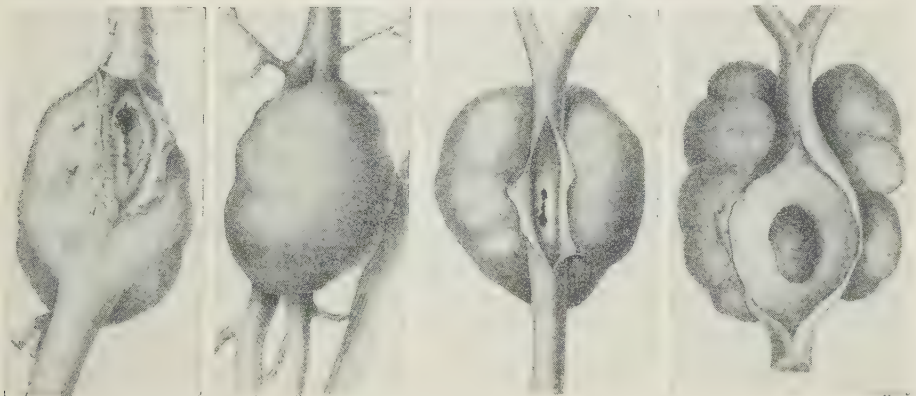
R	Potassium iodide .. .. .	4 drachms
	Infusion of quassia .. .. .	6 ounces
	Water .. .. .	enough to make 12 ounces
	Take one tablespoonful three times a day after meals. After a fortnight the dose may be increased to six teaspoonsful.	

In certain cases, particularly of limb aneurism, surgical treatment, such as tying the artery, inserting wires into the swelling, etc., which can only be carried out in a hospital, may be advisable.

The outlook in aneurism is always grave. Sudden death may occur during any mental excitement or physical exertion. On the other hand, people who are willing to regulate their lives carefully, to eat moderately, and to give up all heart stimulants, may live to ripe old ages.

**ANGINA** is a general term sometimes used to denote swellings of the throat or surrounding tissues causing difficult breathing, as in laryngeal angina (laryngitis), tonsillar angina (quinsy), membranous angina (croup).

**ANGINA PECTORIS** is a disease generally characterised by agonising paroxysms under the breast-bone, and radiating to the arms and elsewhere.



DIFFERENT TYPES OF ANEURISMS

Aneurisms (swelling of arteries due to disease, particularly of the inner wall) in the carotid artery and the aorta of the abdomen and chest.

The ailment is far more common in men than in women, and it is more frequent after than before middle-age. The cause is not known. Some consider it a wholly nervous affection which may attack a heart otherwise perfectly free from disease; other authorities believe that some disease of the arteries which supply the heart muscle itself with blood (the coronary arteries) is always present in true angina. Others attribute the pain to disease of the aorta, the main artery leading from the heart.

Members of certain families show a strong predisposition to angina. In sufferers from the disease in later life some grave degeneration of the heart may be expected. In younger persons the heart may be quite healthy.

**Symptoms.** During the paroxysm, which may last for two or three minutes or even longer, the patient is usually held motionless in his continuous intense agony. Besides the excruciating pain he suffers, he feels he is suffocating, he becomes deadly pale, his skin becomes cold and clammy, and he may sweat profusely. He believes himself to be (as is quite frequently the case) in imminent danger of death.

Frequently the pain radiates from the heart up to the left shoulder, and down the arm as far as the elbow and inside the forearm. The lips are livid, but he dare not even draw a breath lest he aggravate the excruciating pain. Then, more or less quickly, all pain and other symptoms may pass off, and the patient may feel practically well, save for a certain amount of exhaustion. In other cases less severe pains may persist for hours, and in others again pain may follow pain, keeping the sufferer in incessant agony even for days.

The first attack of angina, which often occurs during some effort, such as hastening for a train or walking against the wind, or even under some great excitement or stress, is rarely fatal, and when it is the diagnosis may be very difficult. When death does occur during a paroxysm, there is usually a history of many previous attacks which have been safely weathered.

**Prognosis.** In angina the outlook is always serious. The prognosis, however, varies largely in different cases, depending on how much the heart itself and the important arteries about it are organically diseased. The patient, therefore, should not allow himself to sink into a panic.

**Preventive Treatment.** The patient who has once suffered from true angina pectoris must understand that, although he may survive for years, this malady is always of the very gravest importance. The four things he must guard against chiefly are (1) any unusual physical exertion or strain, (2) overeating (particularly of meaty and starchy foods), and making efforts after meals, (3) alcoholic beverages except in small quantities, and (4) mental worry and excitement of every kind.

Three moderate-sized meals are sufficient. Of these the evening meal should be the lightest. Any tendency to flatulence should be obviated by strict attention to the diet, and by taking occasionally a peppermint lozenge

or a five-grain bismuth tablet, or rhubarb, soda, and ginger tablet an hour after meals. Much starchy food, such as potatoes, white bread, pastry, thick soups, carrots, parsnips, turnips, beetroot, and sweets should be avoided as likely to encourage flatulency.

A daily free action of the bowels is an essential of preventive treatment. To ensure this, a teaspoonful of compound liquorice powder or half to one teaspoonful of the liquid extract of cascara may be taken at night when necessary. Tea, coffee, and tobacco had better be given up entirely. Daily moderate exercise, such as a short but quiet stroll on level ground must not be neglected. Great care must be taken, however, to avoid the slightest over-fatigue, chilling when overheated, or any unusual exertion, such as climbing hills. The bath and graduated exercise treatment given at Nauheim (Germany) is often of great use in preventing recurrences.

As important as anything else in warding off angina attacks is the control of the emotions. Any occupation which demands continuous nervous strain or worry should be given up at once. Fits of temper should be avoided at all costs, for many fatal seizures of angina have been directly brought on by their victims falling in a rage. In a word, repetitions of attacks must be carefully avoided, as each attack opens the way to another.

**Treatment of Attack.** No one who has suffered from an attack of angina should ever again be without the small glass phials of nitrite of amyl (two to five minims each), which any chemist can supply. At the first sign of an attack he should break one of these phials in his handkerchief and inhale the fumes. In place of this a dose of half to two minims of trinitrin (one per cent. solution) may be taken.

If the pain has not passed off by the time help arrives, lay the patient on the floor or on a bed, cover him well with blankets, place a hot-water bottle over the chest, and give him a stiff dose of hot brandy and water. The doctor, of course, should be sent for immediately, as strong heart stimulants and atropine may have to be injected hypodermically.

As soon as the patient can be got to bed, an inch square of mustard plaster should be placed over the heart region and left on for fifteen minutes. If, despite the inhalation of the nitrite of amyl, the pain continues, the physician may give a hypodermic injection of quarter of a grain of morphia. Sometimes the inhaling of a few drops of chloroform on a handkerchief will relieve the agony when all other agents fail.

**General After-Treatment.** It should be fully realised that no two cases of angina pectoris are alike, and that therefore no cut and dried rules can be laid down for treatment.

Immediately after the first suspicion of an attack the patient should be minutely examined by a physician, and his whole manner of life and way of living should be gone into in detail.



The disease may be complicated and rendered infinitely more serious by the presence of degeneration of the coronary arteries which supply the heart itself with blood. Again the heart muscle itself may be degenerated. It is only after careful study of all the symptoms present that the physician can map out his line of treatment, or give any accurate prognosis as to the patient's future.

Sometimes sleeplessness or disturbed sleep is a very troublesome symptom requiring treatment. The bromides give good results here, and may be used alone or in conjunction with chloral hydrate as in the following prescription :

R  
 Bromide of potassium .. .. . 1 drachm  
 Chloral hydrate .. .. . 30 grains  
 Chloroform water .. .. . to make 3 ounces  
 Make into a mixture. Take two tablespoonsful at bedtime occasionally when really needed.

When the disease is in its early stages prolonged treatment with the following mixture often seems to control its progress markedly, and in some cases to postpone further attacks indefinitely (Calwell.)

R  
 Potassium iodide .. .. . 2 drachms  
 Potassium bicarbonate .. .. .  $\frac{1}{2}$  ounce  
 Water .. .. . to make 12 ounces  
 Make into a mixture. Take one tablespoonful three times a day in a little water after meals.

This treatment should be continued for three weeks, then stopped for a week or so, and again renewed for another three weeks. Once or twice a week during the treatment the patient should thoroughly flush out the system with a grain or two of calomel taken at night and followed next morning by two teaspoonsful of sulphate of soda in a wineglassful of water. This combined treatment tends to reduce the pressure of the blood in the arteries, and so lessens the work on the heart, a point always to be aimed at in the treatment of angina.

True angina is very much rarer in women than in men, a point which distinguishes it from false, or pseudo, angina, which is not uncommon in women, especially around the period of the change of life.

After an attack of angina has passed off the patient should remain in bed for at least twenty-four hours.

**FALSE ANGINA PECTORIS, OR PSEUDO ANGINA.** This ailment, characterised by recurrent attacks of more or less severe pain in the heart region, is frequently mistaken for true angina pectoris. False angina is much more frequent in women than in men, and is commonest in neurasthenic and hysterical subjects (Osler.)

False angina has been divided into two main groups (1) cases resulting from neurasthenia, hysteria, or other nervous conditions ; (2) those due to chronic poisoning, the result of excessive use of tobacco, tea, coffee, and other strong drugs.

The following table, modified from Huchard, gives in parallel column the chief points of difference between true angina pectoris, which is a highly fatal complaint, and pseudo, or false, angina, which is never fatal.

TRUE ANGINA	PSEUDO ANGINA
Most common between the ages of forty and fifty years.	At every age, even six years.
Most common in men. Attacks brought on by exertion.	Most common in women. Attacks spontaneous.
Attacks rarely periodical or nocturnal.	Often periodical and nocturnal.
Not associated with other symptoms.	Associated with nervous symptoms.
Agonising pain and sensation of compression by a vice.	Pain less severe; sensation of distension.
Pain of short duration. Attitude: silence, immobility.	Pain lasts one or two hours. Agitation and activity.
Prognosis grave, often fatal.	Never fatal.

Tobacco heart, the result of over-smoking, accounts for most of the cases of pseudo angina in men. Sir William Osler distinguishes three groups of so-called tobacco heart. First the irritable heart of smokers, seen especially in young lads, in which the symptoms are palpitation, irregularity, and abnormally rapid beats. In the second class the heart pain is described as of a sharp, shooting character which may be severe. In the third class the attacks are of such severity that they deserve the name of angina. Frequently in these cases the heart attacks are accompanied by coldness of the hands and feet, a feeble pulse, and fainting. The outlook here is very much better than in true angina. Pain over the heart, in fact, need not be looked upon as dangerous if there are no evidences of arterio sclerosis (which see), or disease of the valves of the heart.

**Treatment During an Attack.** Not infrequently the exciting cause of an attack of severe heart pain is the presence of undigested food in the stomach. If there are any suspicions that such is the case, an emetic of mustard and water (a teaspoonful of mustard in a glass of warm water) should immediately be given to empty the stomach. When this has been accomplished a teaspoonful of sal volatile in a wineglassful of water, by slightly stimulating the heart, will frequently relieve the pain. An inch square mustard plaster applied over the heart region and left in place till the skin begins to redden is another simple but frequently very efficacious remedy.

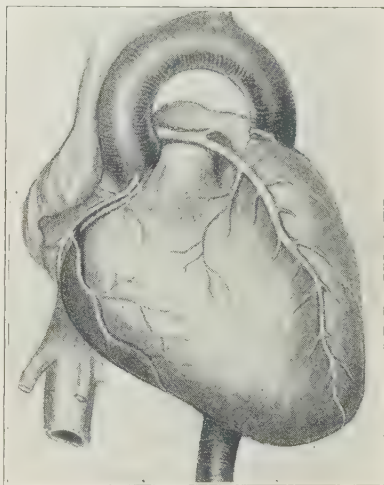


DIAGRAM OF THE CORONARY ARTERIES  
Some authorities believe that it is disease in these arteries (which supply the heart muscle) that causes angina pectoris.

In other cases an ice cap placed over the heart region quiets its excited beating, and puts an end to the pain.

**To Prevent further Attacks.** In false angina in hysterical or neurasthenic cases the treatment should be directed towards the cure of the hysteria or neurasthenia. When this is accomplished the seizures of heart pain will pass off of themselves.

In hysteria, as a general rule, too much sympathy is bad for the patient, as it tends to exaggerate the seriousness of the complaint; on the other hand, treating the patient as a malingerer, and scolding her for not better controlling herself, too often only make matters worse.

Her physical condition and general way of living should be looked into carefully, as it may be that lack of an abundance of plain, nourishing food, too little sleep, overwork, lack of outdoor exercise, a badly ventilated sleeping-room, etc., chronic indigestion, or habitual constipation, may be the cause of the trouble. Even in severe cases a rest cure in bed for two or three weeks, with no visitors, no letters, and freedom from all outside worries, may bring about a speedy cure. During the "rest cure" the patient should be restricted to a milk and milk-food diet.

The following simple tonic is sometimes of use in combating any slight anæmia which may be present, and building up the general nervous stability.

R

Quinine sulphate .. .. .	16 grains
Ferrous sulphate .. .. .	16 "
Dilute sulphuric acid .. .. .	$\frac{1}{2}$ drachm
Glycerine .. .. .	3 drachms
Chloroform water .. .. .	to make 8 ounces

Make into a mixture. Take one tablespoonful in a little water three times a day after meals.

If, as is frequently the case, the patient is of a constipated habit, the following tonic aperient mixture may be preferable to the simple tonic prescribed above:

R

Ferrous sulphate .. .. .	16 grains
Sulphate of magnesium .. .. .	4 drachms
Dilute sulphuric acid .. .. .	1 drachm
Peppermint water .. .. .	to 8 ounces

Make into a mixture. Take one tablespoonful in a little water twice a day after meals.

For checking the hysterical seizures which sometimes precede the attacks of heart-pain the following mixture is sometimes useful:

R

Ammonium carbonate .. .. .	20 grains
Bromide of potassium .. .. .	60 "
Tincture of sumbul .. .. .	90 minims
Chloroform water .. .. .	to make 6 ounces

Make into a mixture. Take two tablespoonsful at onset of hysterical symptoms, and repeat once after two hours, if necessary.



**Pseudo-Angina in Neurasthenic Cases.**—The following table (adapted from Savill) shows the main points of difference between neurasthenia and hysteria, and will be helpful in making the diagnosis between these two sometimes very similar ailments.

NEURASTHENIA	HYSTERIA
Commonest in middle-aged.	Always shows itself before thirty.
Memory frequently defective.	Want of control over emotions, tendency to vacillation and indecision.
Deficient powers of attention.	Patient born with hysterical tendencies. An emotional upset may have ushered in first attack.
Cause can usually be traced to overwork, dyspepsia, auto-intoxication (which see), injury, or severe nervous shock.	Hysterical patient perfectly normal one day, and wildly hysterical the next.
Disease begins gradually and runs a fairly even course.	Fond of gaiety and amusement. Usually joyous, but laughter and tears may alternate with great rapidity. No tendency to suicide.
Mind usually introspective, sad, and worried. Often suicidal.	Flushes readily. Fainting fits very common.
Fainting fits rare. Never have convulsions.	Convulsive seizures common.
In a constant state of exhaustion and debility. Frequent headaches, restlessness, and insomnia.	

**Treatment of False or Pseudo-Angina in Neurasthenics.** The treatment here is simply that of neurasthenia itself. In the first place the patient should realise that, although a cure is always a matter of weeks or months, it is nearly always attainable in the end. This point fully grasped, she must regulate her life so as to do away entirely with the cause, or, at any rate, render it as little active as possible. If she is an idler, she must find some interesting work; if she is over-worked, she must take a long holiday, if possible. If a city dweller, a few months in the country will probably help her, and vice versa. She must take moderate, daily exercise, but must avoid all fatigue. A rest in bed, or, better still, an hour's sleep twice a day, will help in the rejuvenation of the run-down nervous system. Excitement of all kinds, whether at games or at business, should be avoided. Her diet should consist largely of fish, poultry, sweetbreads, tender mutton, eggs, milk and milk foods, and a moderate amount of vegetables. Red meats, very fat meats, and coarse vegetables, such as cabbage, Brussels sprouts, etc., are better avoided. Alcohol is practically always harmful in these cases.

Equally as important as any of the above measures is the setting right of any minor ailment, which may be keeping the nervous system in a rundown and debilitated state. For example, any decayed teeth should be put right, any constipation should be remedied, any dyspepsia should be treated, as these are all common causes of neurasthenia.

If sleeplessness is constant and troublesome, the following prescription will be found of service, but it should be fully realised that *drugs of this sort should never be used habitually nor more often than is absolutely necessary.*

℞

Phenacetin .. .. .	15 grains
Bromide of potassium .. .. .	30 "

Mix and make into three powders. Take one powder in two ounces of peppermint water one hour before bedtime.

If the patient is anæmic and generally run down and depressed, the following mixture may be taken for a month or six weeks with advantage :

℞

Sulphate of iron .. .. .	30 grains
Sulphate of quinine .. .. .	30 "
Dilute sulphuric acid .. .. .	1½ drachms
Water .. .. .	enough to make 8 ounces

Make into a mixture. Take one half to one tablespoonful three times a day after meals.

Instead of the above, the following pill (which, beside containing iron, also has an aperient ingredient) may be taken where there is a tendency to constipation.

℞

Aloin .. .. .	5 grains
Extract of nux vomica .. .. .	5 "
Iron pill .. .. .	150 "
Quinine sulphate .. .. .	30 "

Mix to form a mass, and make 100 pills. Take one pill after the midday and the evening meal.

Where, as is frequently the case, chronic dyspepsia or indigestion is a prominent symptom of the neurasthenia, the following mixture, taken before meals, often has an excellent effect :

℞

Sodium bicarbonate .. .. .	2 drachms
Sodium sulpho-carbolate .. .. .	1½ "
Dilute hydrocyanic acid .. .. .	½ "
Compound tincture of cardamoms .. .. .	3 "
Compound infusion of gentian .. .. .	enough to make 8 ounces.

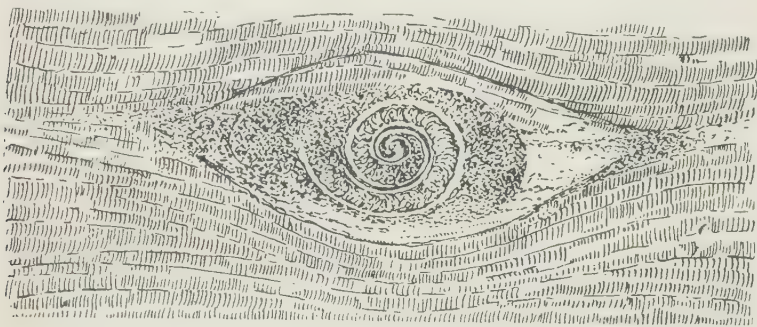
Make into a mixture. Take one ounce three times a day twenty minutes before meals.

**PSEUDO-ANGINA DUE TO TOBACCO POISONING OR EXCESSIVE TEA OR COFFEE DRINKING.** Here the remedy consists simply of cutting off the drug which is poisoning the nerves of the heart and leading to the attacks of heart pain.

**ANILINE.** A colourless liquid with an aromatic odour, which is prepared from coal tar, from benzene, and from indigo. By further processes dyes of every hue are obtained from the aniline. Sometimes these are made with the aid of arsenic, and in the lower quality dyes some of the arsenic may remain. Probably this is why aniline-dyed stockings, and other articles of clothing,

sometimes give rise to irritation of the skin, and rashes resembling eczema, wheals, or boils, which are very difficult to cure.

**ANILINE POISONING.** If seen immediately empty the stomach with a mustard and water emetic (a teaspoonful of mustard to the pint of water), and apply a mustard plaster over the heart, removing after ten minutes. Keep



A TRICHINA WORM IN HUMAN MUSCLE BY INFECTION FROM PORK

the patient warm with hot bottles and by wrapping in blankets, and give two tablespoonsful of brandy as a heart stimulant. The doctor on his arrival may, if the patient's breathing is very laboured, practise artificial respiration, and inject warm saline solution into a vein (one drachm of common salt to one pint of water).

**ANIMAL FOOD** includes meats, poultry, game, fish, eggs, milk, and cheese. All of these are rich in nitrogenous, body-building elements.

**ANIMAL DISEASES COMMUNICABLE TO MAN.** Of all the diseases which human beings sometimes contract from animals the most important is tuberculosis.

The germs of this disease are present in one-ninth of the milk consumed in London, and probably much about the same proportion of milk is infected in other parts of the country. Butter, cheese, and the flesh of the diseased animal may also be the media of infection. Cream has been known to infect people with lupus (a chronic form of tuberculosis) when rubbed on the skin as a remedy for skin eruptions. Ringworm may arise as a result of infection by cats or dogs affected with a variety of mange, by birds, cattle, pigs, and horses.

Cats suffer from diphtheria, or a disease very similar to it, and it is most probable that they can give rise to diphtheria in human beings. A cat with a "cold" should be strictly isolated. Both cats and dogs may harbour in their fur the germs of many infectious diseases, including influenza, scarlatina, whooping cough, measles, etc. From them we may get itch and tape-worms.

Anthrax, or "wool-sorter's disease," can be conveyed to man not only by infected skins and wool, but from living goats, cattle, and horses. Glanders



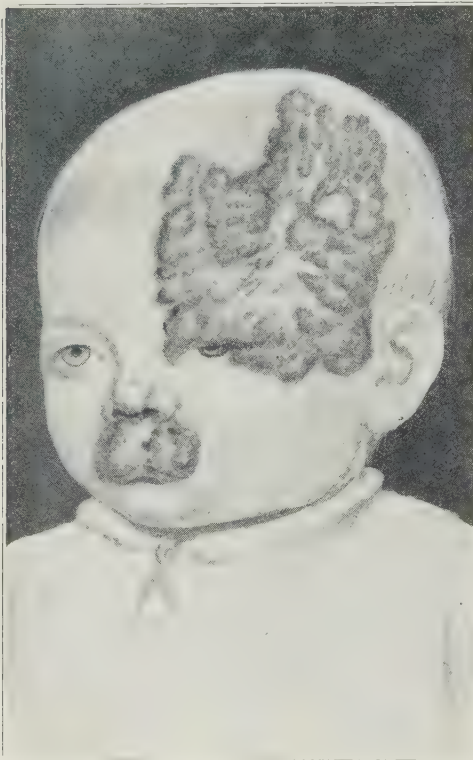
is sometimes contracted by grooms and stablemen from horses suffering from the disease. Horses suffer from a variety of influenza, which occasionally they pass on to man. Dogs, cats and foxes, and probably other animals, suffer from rabies, which when passed on to human beings is called hydrophobia.

People who have to do with cattle or pigs suffering from actinomycosis sometimes contract the disease from them.

Apthous fever, or foot-and-mouth disease, an infectious ailment in cattle, is not infrequently passed on to human beings (see page 118).

From the pig and the ox man may also become infected with certain species of tape-worms, known as the *Tænea solium* and *Tænia mediocanellata* respectively. From eating diseased pork in which the immature or undeveloped *Trichina spiralis* parasite is encysted, a disease called trichinosis is sometimes set up in man. The worm itself is about one-sixth to one-tenth of an inch in length. The immature young which result from the breeding of the trichina worms in the intestine, pass through the intestinal walls and may finally be deposited in any of the muscle fibres throughout the body.

**ANGIOMA** is a tumour composed chiefly of blood-vessels. The large, raised, dark-red birth-marks which when on the face are so disfiguring, are examples of angioma.



INCURABLE ANGIOMA (BIRTH MARK)  
From a case at Guy's Hospital.

Certain varieties of angioma, or port wine stains, are readily removable by the carbonic snow treatment, by application of the X-rays or by radium [See BIRTH MARKS]. When, however, the angioma is much raised from the surface of the skin, and the blood channels forming it are many and large, the results obtained by these means are rarely satisfactory.

The carbonic snow treatment which is now used on suitable cases, *i.e.*, small pink, not red, and not raised angioma, at most large hospitals, consists of pressing against the angioma for a few seconds a stick of frozen carbon dioxide. After a few days a scab forms, and when this comes away the skin is left, in many cases, practically normal.

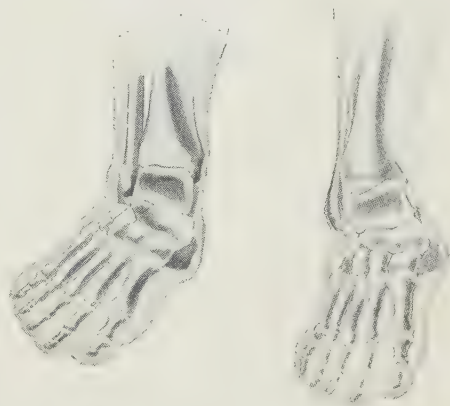
**ANISE.** The preparations of this fruit are used for the same purpose as other aromatics. The anise plant is a native of Egypt. It is cultivated there and in Syria, Spain, and Germany for its seed (aniseed), from which the volatile oil of anise is expressed. Oil of anise is slightly expectorant, and therefore sometimes useful in cough mixtures. It is a common remedy for flatulence in children.

The doses for an adult are :

Oil of anise	..	..	..	..	$\frac{1}{2}$ to 3 minims
Spirit of anise	..	..	..	..	5 to 20 "
Water of anise	..	..	..	..	1 to 2 ounces

**ANKLE, DISEASES OF.** The ankle, from its position and the slight covering over its bones, is particularly open to such accidents as sprain, dislocation, and fracture.

**Sprained Ankle.** A sprain is usually the result of a severe wrenching or twisting of the joint. The chief symptoms are rapid swelling of the part, together with great pain. Sometimes in severe sprains the whole joint may become rapidly filled with blood. The black and blue discoloration is due to blood poured out into the tissues, the result of the laceration of the parts under the skin at the time of the sprain.



THE BONES OF THE ANKLE JOINT  
On the left is the normal ankle joint; on the right the joint dislocated.

In severe sprain of the ankle it may be advisable to X-ray the part, otherwise a fracture of the tip of one of the bones of the leg may be overlooked.

**Treatment.** The limb should first be put on a back-splint, the foot being kept in a natural position at right angles to the leg. To relieve the pain, cloths wrung out in ice-cold water and frequently changed, or ice bags, may be applied over the seat of the sprain. On the second day hot fomentations, made by wringing out a towel in very hot water, may be applied to the joint in place of the cold used in the earlier stages.

By the fourth day, unless the pain is still too severe, massage should be begun. The massage should be gentle, because it is almost certain to increase the pain at first. If the pain is too severe, postpone the beginning of the massage until two or three days later. In order to prevent stiffness, the joint, from the end of the week onwards, should be subjected to daily "passive movements." These are carried out by grasping the foot firmly with the hand and gently rotating it in all directions at the ankle joint. If this massage and gentle manipulation be omitted, fibrous adhesions may form in the joint, leading to chronic stiffness, which may last for many months.

**Dislocation of the Ankle.** The ankle may be dislocated backwards, forwards, or to either side. In any dislocation there is also apt to be a fracture of the tip of one or both of the leg bones. An X-ray photograph should therefore be taken, if possible, in all cases of dislocation of the ankle.

To reduce a dislocated ankle the patient lies on his back, and, raising the knee of the affected leg, he clasps both hands under the knee, holding the leg firm. At the same time the operator, grasping the foot in his two hands, pulls the foot downwards and away from the leg bones until it slips back into place.

After the dislocation has been reduced, the leg should be put on a well padded back-splint with a foot piece at right angles to the main length of the splint, and kept in this position (with the foot at right angles). At the end of a week the splint should be removed for a few minutes, and gentle massage of the ankle should be begun.

If there is much swelling and pain immediately after the accident, the cold-water bandages—followed by hot-water bandages at the end of forty-eight hours, as suggested above under “Sprains” may be applied.

The joint should be kept at rest in the splint—except when the massage is being carried out—for a month, and for some weeks after that the patient should take the greatest care to avoid any wrenching or strain on the injured joint.

If there is fracture of a bone in addition to the dislocation, the case must be treated as one of fracture.

**Fracture of the Ankle.** Here either the fibula, the lighter bone on the outer side of the leg, is broken close to its lower extremity (Pott’s fracture), or the inner bone, the tibia or shin bone, may be the one injured. If possible an X-ray photograph should be taken at once to make certain the position and extent of the fracture. When only the tip of the fibula is broken, as from a sudden wrenching of the foot or a blow or kick on the part, the patient may be able to walk, although with great pain. When the fracture is the result of a wrench of the ankle, there may be severe lacerations of the ligaments about the joints as well, leading to severe pain, swelling and discoloration under the skin.

In fracture of the ankle an improvised crutch should be obtained for the patient, who should on no account attempt to put his weight on the limb. As soon as possible the surgeon should “reduce” the fracture; that is, manipulate the ends of the bones until they are brought as close as possible back to their original position. Then the whole leg and foot should be enclosed in a comfortably padded box-splint or a three-side splint, where it can be kept immovable. If the tissues over the fracture are lacerated by the sharp end of the broken bone pushing its way through the skin—compound fracture—the fracture, in addition to the above treatment, must be looked upon as an open wound, and be treated as such with every antiseptic precaution. After three weeks to a month the splint may be removed, and the patient may get



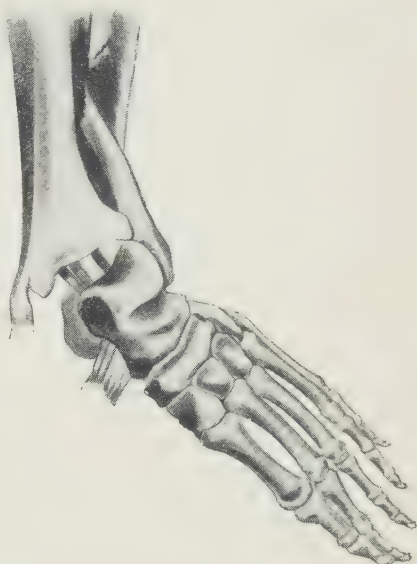
about, very cautiously, with a stick. For another fortnight, however, he should not attempt to put his weight on the foot. As soon as the splint is removed, gentle massage and passive movements of the foot and the leg—as described above under “Sprain”—should be carried out by the nurse.

Surgeons no longer believe that *absolute* lack of motion is essential for the healing of a broken bone. On the contrary, many practitioners recommend commencing gentle massage within a week after the fracture. The resulting slight movement of the broken surfaces on each other in a fracture which has been well set is thought to hasten rather than retard the knitting of the bones.

**Tuberculous Disease of the Ankle.** The chief symptoms are a gradually developing swelling of the whole ankle with more or less pain, and perhaps some little increase of heat in the part. Later, the skin reddens, and a thin, yellowish discharge may take place from one or more openings which lead from the skin surface down to the diseased bone.

The one essential in treatment is complete rest. The whole foot, ankle, and the leg for some inches above the ankle, should be immovably fixed in a suitable splint or plaster-of-paris cast. If there is discharge, openings must be left for this to drain away. In advanced and intractable cases, an operation for scraping away a portion of the diseased bone in the joint may be necessary. In other cases prolonged rest for months on end may be all that is needed to bring about a complete cure. When the splint is finally removed it should only be dispensed with gradually. For the first week it may be left off at night only; later, it may be left off for a certain number of hours each day. While the ankle is in the splint a patten should be worn on the other foot; so that by the aid of crutches the patient can get about in the open air.

In addition to the local treatment, the patient's general health should be built up in every way possible. He should get all the sunshine and fresh air possible, and have an abundance of plain, nourishing food, including plenty of fats.

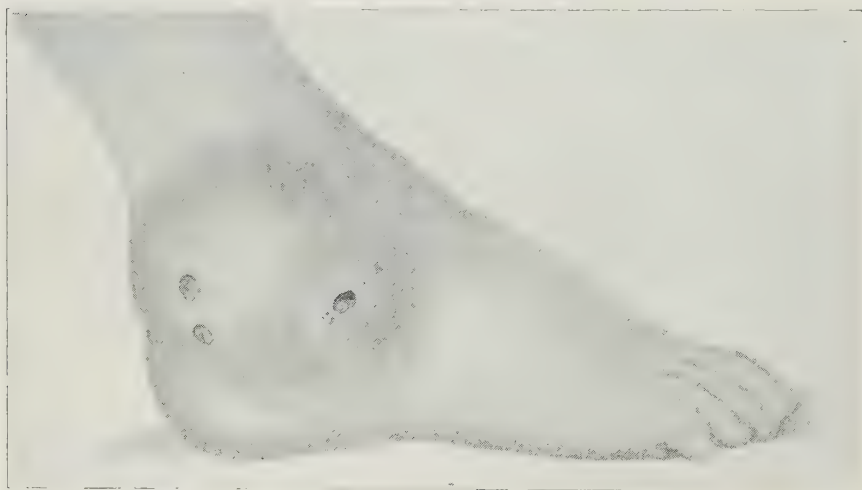


COMMON FRACTURE OF THE ANKLE  
Usually known as Pott's fracture.

Cod liver oil is an invaluable remedy in these cases. The following mixture, containing cod liver oil, often has a valuable tonic effect, and may be taken for weeks on end if the digestion allows :

℞							
	Cod liver oil	..	..	..	..	..	3 ounces
	Iron and ammonium citrate	..	..	..	..	..	1 drachm
	Gluside	..	..	..	..	..	3 grains
	Oil of caraway	..	..	..	..	..	3 minims
	Water	..	..	..	..	enough to make	12 ounces
Make into a mixture. Take two tablespoonsful three times a day after meals.							

Sometimes children rebel strenuously against taking cod liver oil. Unless it really interferes with their digestion, the giving of the oil should be persisted in, however, as in these cases of chronic tubercular bone disease it is the most valuable remedy the physician can prescribe. A somewhat more pleasing



TUBERCULOSIS OF THE ANKLE, SHOWING THE TYPICAL SWELLING

mixture than the above, suitable for children of eight to twelve years, is the following :

℞							
	Cod liver oil	..	..	..	..	..	2 ounces
	Syrup of iron phosphate	..	..	..	..	..	1 ounce
	Oil of cassia	..	..	..	..	..	4 minims
	Mucilage of gum acacia	..	..	..	..	to make	4 ounces

Make into a mixture. Take two teaspoonsful three times a day after meals.

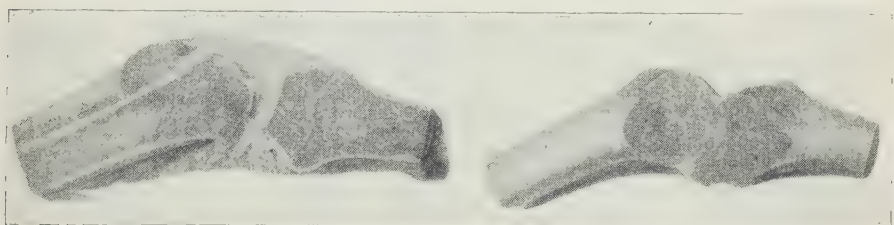
**ANKLES, WEAK.** Children who walk too soon are apt to strain the ligaments of the feet, and to suffer from weak ankles. A very young child should, therefore, be restrained from standing or walking, rather than encouraged. To treat weak ankles, the soles of the shoes should be thicker

on the inner than on the outer side, and the shoes should have fairly high heels. In bad cases a special close-fitting boot must be worn, and a piece of whalebone or a steel frame must be applied to the ankle and leg.

**ANKYLOSIS** is a condition of a joint in which its capacity for movement is partly or completely lost. It may result from inflammation of the cartilages, bones, ligaments, synovial membranes, and other causes.

In complete ankylosis, the ends of the bones are firmly united, and the joint is useless. In incomplete ankylosis, where partial movement is possible, the condition is usually due to the formation of fibrous bands, or contraction of the ligaments, tendons, etc.

**ANKYLOSTOMIASIS** is a parasitic disease, caused by a worm found in hot countries, including Egypt, India, Brazil, the West Indies, the United States, and Italy. The embryo lives in moist earth, whence it gains access to the intestines of man in drinking water, and probably in other ways. Here it develops into the mature ankylostoma, the female worm being half an inch long, the male one-third of an inch long. These attach themselves



JOINTS RENDERED FIXED AND USELESS BY ANKYLOSIS

to the wall of the intestine (duodenum and jejunum) by their armature of sharp teeth, and suck the blood of the mucous membrane.

**Symptoms.** The constant drain of blood frequently produces severe anæmia in the course of time. The skin becomes of a muddy hue, the eyes grow dull, the patient wears a heavy, stupid expression. The liver and spleen enlarge. As the anæmia increases the patient suffers from breathlessness and palpitation, the abdomen becomes prominent owing to flatulent distension, and dropsy frequently develops, especially in the feet. To produce these symptoms in an adult a considerable number (500 or more) of worms may be present. Child subjects of the disease are generally stunted.

The disease is very fatal in many tropical countries. In Cornwall the anæmia so common among the miners has in many cases been shown to be due to the ankylostoma.

**Treatment.** Where this parasite is present drinking water should be filtered. Thymol is the specific remedy. Half a drachm may be taken by an adult at 8 a.m., and half a drachm at 10 a.m. Two hours later give a dose of castor oil. At the end of a week, if ova, or eggs of the worm, are still found



in the stools, repeat this treatment. The thymol is best taken in brandy or whisky (Sandwith).

The anæmia of the patient should be treated in the ordinary way. Instead of the thymol, some authorities recommend male fern, in doses of one to two drachms, followed by a saline purge.

The following prescription is suitable for a grown person :

℞	Extract of male fern	..	..	..	..	1 drachm
	Mucilage of tragacanth	..	..	..	..	1 "
	Peppermint water	..	..	..	to make	1 ounce

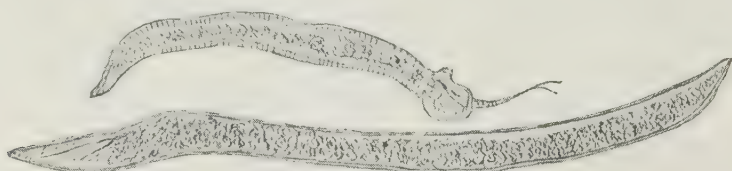
Clear the bowels thoroughly with one or two tablespooful of castor oil, and then take the whole of the above mixture. Next morning a second dose of one or two tablespooful of castor oil should be taken before breakfast.

For combating the anæmia, the following mixture may be taken for three weeks or a month after the worms have been expelled :

℞	Citrate of iron and quinine	..	..	..	..	3 drachms
	Tincture of nux vomica	..	..	..	..	2 "
	Peppermint water	..	..	..	to make	3 ounces

Make into a mixture. Take a dessertspoonful three times a day twenty minutes before meals.

**ANODYNES** are drugs and other agents which relieve pain. The following are local anodynes of value in neuralgia, painful joints, toothache,



THE ANKYLOSTOMA WORMS, MALE AND FEMALE

Attaching themselves to the wall of the intestine, they cause anæmia by sucking the blood of the mucous membrane. Magnified about eight times.

etc. : Aconite, carbolic acid, menthol, ether, chloroform, chloral, belladonna, opium, oxide of zinc, dilute hydrocyanic acid. Local anæsthetics not only relieve existing pain, but reduce the sensibility of the part to which they are applied. They include cocaine, eucaine, and freezing of the part by means of chloride of ethyl spray. (See ANÆSTHETICS.)

**ANOPHELES** : the variety of mosquito which transmits the parasite of malaria to man.

These mosquitoes breed principally in marshy districts, the larvæ, or developing young, feeding on the surface of the water. The full-grown mosquito is speckled black and white or brown and white, and generally the wings are not plain, but possess three or four black marks along or near the front border (Ross). When the insect is seated at rest on a wall, the tail projects outwards at an angle from the wall. On the other hand, the Culex mosquito,



THE MALARIA MOSQUITO AND THE COMMON GREY GNAT

At the top are the mosquito larva and the floating eggs of the common gnat. Below on the left is the common grey gnat, the malaria-carrying mosquito (*Anopheles*) being on the right. At the bottom the malaria mosquito is shown in the flying position.

the common gnat of Europe, which does *not* carry malaria, sits with the tail hanging downwards or even nearly touching the wall.

In contra-distinction to the malaria-carrying anopheles mosquito's black-marked wings and speckled brown and white bodies, the *Culex* mosquito presents a uniform grey appearance, with pale yellowish bars across the back of the abdomen and plain, unspotted wings (Ross).

The cycle of changes the malarial organism undergoes both in man and in the body of the anopheles mosquito which carries the malarial infection from one person to another, is roughly as follows: In the blood of the sufferer from malaria certain organisms known as amœbulæ are present during the intervals between attacks. These amœbulæ enter the red blood cells, and there undergo a period of development. When mature these amœbulæ give place to what may be termed the secondary varieties of organisms. These secondary organisms are of two sorts. The first, after further changes, are set free in the blood fluid by the breaking up of the red blood cells which had contained them.

This breaking up of the red blood cells, and the consequent freeing of the micro-organisms so that they can attack new red cells, corresponds in point of time to the malarial paroxysm, or "attack of ague."

The second type of secondary organisms which come to maturity in the red blood cells develop no further in the blood of the patient, but when he has been bitten by a mosquito, and a portion of his blood containing these organisms finds its way into the mosquito's stomach, they immediately take on a new cycle of activity. Coming to maturity, they too escape from the red blood cells which contained them, and immediately mate among themselves. The result of this mating is still another type of organism, called the "zygote." This zygote, in the process of development, becomes filled with many scores of tiny eggs, or "blasts," which finally find their way in hundreds into the mosquito's salivary duct. In the act of the mosquito's biting a human being these eggs, or "blasts," are injected into the victim's tissues. After a further developmental period these eggs, or "blasts," mature into amœbulæ, and the whole cycle as described above is once more begun.

For people who live in regions where the anopheles mosquitoes breed—and where, in consequence, malaria is a common disease—there are a number of protective measures of varying efficiency which should be taken to escape the bites of the insects.

The most essential of these is an efficient bed net. Since the discovery of the part the anopheles mosquito plays in the spread of malaria, practically everyone in the tropics who can afford one sleeps under a bed net. Care must be taken that there are no holes in the net, that when lifting it to enter the bed mosquitoes are not allowed to enter also, that the mesh is neither wide enough to allow the mosquitoes to crawl through, nor fine enough to exclude the air.



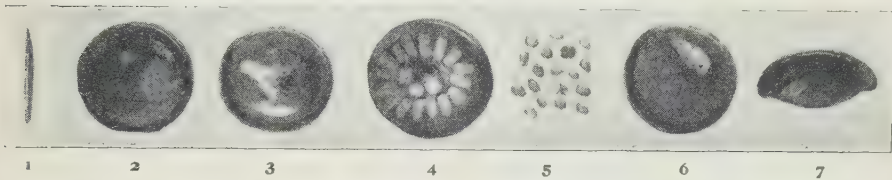
Of ointment and salves to be smeared on the exposed part—the face, hands, ankles, etc.—scores have been “highly recommended,” but few in practice give any dependable results as anti-mosquito protectives.

The following mixture is mentioned by Professor Lavarán (who discovered the organism of malaria) as recommended in the tropics, though he adds that his own experiences have been unfavourable with such substances (Ross).

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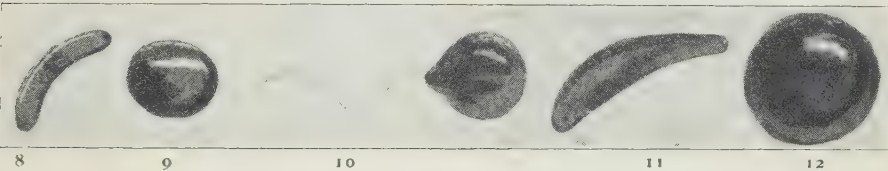
Camphor	..	..	..	..	..	..	1 part
Naphthaline	..	..	..	..	..	..	10 parts
Vaseline	..	..	..	..	..	..	100 parts

Mix well. Apply to exposed surfaces.



(1) THE CYCLE OF CHANGES OF THE MALARIA GERM IN HUMAN BLOOD

When the mosquito bites a human being the malaria germ (1) enters the blood. It enters a red blood corpuscle (2), grows into an amœbula (3), and divides into secondary organisms (4) which are set free (5) by the breaking-up of the corpuscle that had contained them. They attack new red cells (6), and grow at their expense into crescent shaped organisms (7), which are ready as soon as a mosquito bites the malaria-infected patient to start a new cycle of life in the mosquito's stomach.



(2) THE CYCLE OF CHANGES OF THE MALARIA GERM IN THE MOSQUITO

The fully formed female crescent (8) develops in the mosquito's stomach into an egg (9) which, when fertilised by a spermatozoon from a male crescent (10) becomes, a zygote (11); the zygote develops, becomes spherical (12), and finally bursts, setting free countless “blasts,” which are malaria germs (1) ready to enter human blood and begin the whole double cycle over again.

Mosquitoes, as a rule, bite only when their victim remains quiet (Ross). When in danger of being bitten, therefore, this authority recommends maintaining constant small movements of the hands, feet and head, at the same time keeping the air about one in motion with a hand fan.

**ANOREXIA** : loss of appetite. (*See* APPETITE.)

**ANTACIDS** are drugs which neutralise acidity in the stomach or elsewhere in the body—alkaline sodium and potassium salts, etc.

**ANTAGONISM** is a term used to signify the production of opposite effects by different drugs. Thus strychnine stimulates the spinal cord, and is antagonistic to nicotine, which depresses it.

**ANTEFLEXION** is the term used to describe the bending forward of the body of the womb, the normal position of the healthy womb in women who have not borne children.

**ANTEVERSION** means the inclination forwards of the whole womb,

**ANTHELMINTICS** are drugs employed to destroy and expel worms and other parasites from the intestine. Examples are extract of male fern, thymol, turpentine, santonin, etc.

**ANTHRACOSIS** is a fibrous change sometimes found in the lungs of coal-miners, coal-heavers, and others who inhale coal-dust constantly. The lungs can bear the presence of a comparatively great number of dust particles, and sometimes they are entirely black without apparent injury. Finally, however, the tissues tend to harden in patches, both the lungs and the bronchial tubes being involved. Many years usually pass before symptoms become marked. Cough then begins, chronic bronchitis develops, and the health may fail. Occasionally the carbon particles enter the blood, and are carried to the liver, where they lodge and produce anthracosis of that organ. The treatment is the same as for bronchitis.



THE CARBUNCLE IN EXTERNAL ANTHRAX

**ANTHRAX** is an animal disease which sometimes attacks wool-sorters and dealers in hides and cattle. The cause is a micro-organism which clings to the dry skins and fleeces, communicating the disease to man when the germs find their way into the system through cracks in the skin, or by being inhaled or swallowed.

In man there are two forms of the disease. (1) The internal, in which the lungs or digestive tract are attacked by the germ which has been breathed in or swallowed, and (2) the external form, commonly called Malignant Pustule, which takes the shape of a deep and widespread carbuncle, accompanied by high, irregular fever and great general prostration.

The internal form is almost invariably fatal within a few hours of the onset. In the external form, if the patient survives the fever and prostration of the first few days, he may gradually recover.

Preventive treatment consists of carefully disinfecting all fleeces or hides coming from a district affected with anthrax. The hands of wool-sorters, and other workers among fleeces and hides, should be carefully examined every day for any cuts or sores through which any anthrax germs might invade the system. All such workers should be scrupulously careful about washing their hands before eating. All hides and fleeces should be handled wet, for the germs of the disease are most frequently carried into the workers' mouths and nostrils on flying dust.

**Treatment.** The malignant pustule should be at once cut out by the surgeon, the edges of the wound being then cauterised with a 1 to 5 solution of carbolic acid. The treatment of the internal form is almost hopeless from the start, and the patient should at once be removed to a hospital. An anti-anthrax serum is now being experimentally used in some of the great hospitals, and a certain number of lives have been saved by its early use.

**ANTIBODIES** are protective substances produced in the body when it is invaded by the bacteria of disease. They act by destroying the bacteria, by stimulating the leucocytes of the blood to destroy them, or by neutralising the poisons produced by the bacteria.

The human system may in some cases be stimulated to produce larger amounts than normal of these protective antibodies by the injection of bacterial vaccines. In other ailments antibodies are sometimes supplied ready-made by injecting immunised serums. Both methods are now employed in the prevention and cure of several of the infectious diseases.

**ANTI-DIPHTHERITIC SERUM**, or Diphtheria antitoxin, is prepared from the blood of horses which have been rendered immune against diphtheria.

A rough estimate of the value of the anti-diphtheritic serum treatment in preventing deaths from this disease may be obtained from the table below, taken from the statistics of the London Metropolitan Asylums Board Hospitals.



SWELLING OF THE NECK DUE TO ANTHRAX

Five-Year Period	Admissions	Deaths	Ratio of Deaths to Admissions
1879-1883	7,833	2,436	31%
1894-1898	24,048	4,781	20%
1899-1903	35,763	4,262	12%
1904-1908	25,027	2,312	9%

The diphtheria antitoxin came into general use in these hospitals about the middle of the 1894-1898 period. The marked drop from thirty-one to twenty in the ratio percentage of deaths to admission from the previous period of five years speaks for itself.

So convinced are the highest medical authorities of the value of anti-diphtheritic serum in preventing deaths in this highly fatal complaint that the Local Government Board of Great Britain has for some years been supplying the Local Health Authorities with free anti-diphtheritic serum for the use of the poor.



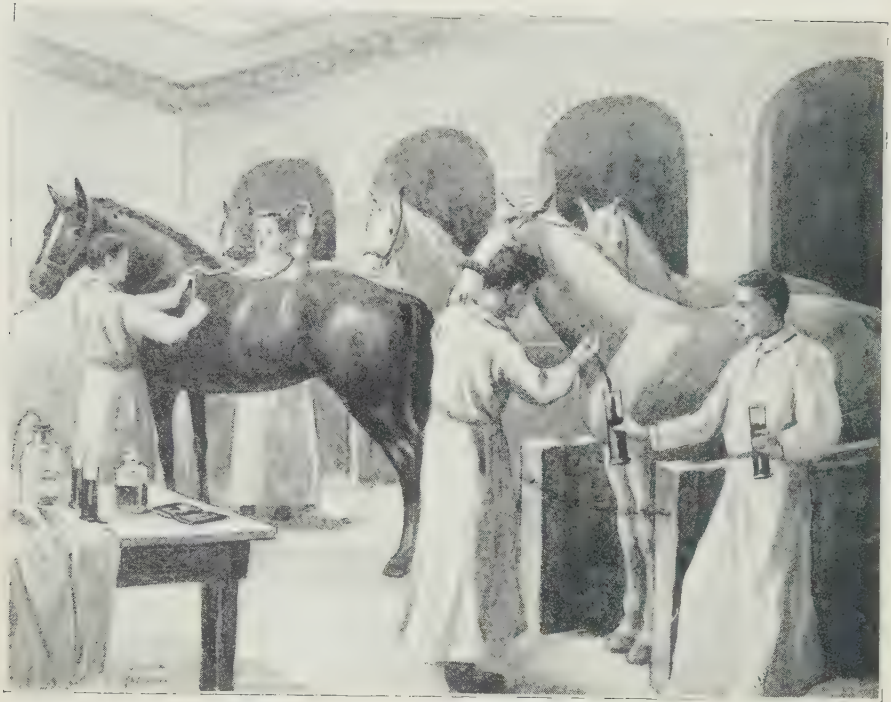
To exert its full effect the anti-diphtheritic serum should be administered as early as possible in the disease. The following table, also taken from the London Metropolitan Asylums Board statistics, shows how essential it is that the least possible time should be allowed to elapse between the outbreak of the disease and the administration of the healing antitoxin.

Number of cases treated	Day of disease on which antitoxin was given	Fatal cases
2,135	1st day	0
1,441	2nd "	62
1,600	3rd "	178
1,276	4th "	220
1,645	5th (or later)	308

The vital necessity of administering the antitoxin at the very beginning of the disease cannot be questioned when one considers that out of 2,135 cases inoculated on the first day there were no deaths, whereas out of 1,645 cases in which there was five or more days' delay, 308 succumbed. The anti-diphtheritic serum is a striking example of the inestimable benefits mankind has derived from judiciously supervised and carefully carried out experiments on animals.

In the preparation of the serum the first step is the artificial cultivation under suitable laboratory conditions of diphtheria bacilli taken from a patient's throat. These bacilli are grown in a "broth" or other culture medium, and when a sufficient growth of bacilli has taken place they are destroyed by heat. A small amount of this broth, containing both the poisons formed by the bacilli in their development, and their dead bodies as well, is then injected into a healthy horse. As a result the horse develops a certain amount of fever and is temporarily more or less ill, but in a day or two he recovers entirely. A second and larger dose of the broth is then given. Once more the animal becomes ill and recovers.

Succeeding doses, each one a little larger than the last, are given at intervals of a few days as the animal's immunity from the poison grows stronger. Finally, a small dose of a new diphtheria broth, containing live and active bacilli, is injected. These, instead of setting up the disease, are at once killed off as the result of the immunity the horse has previously acquired from his earlier treatment. When this stage has been reached—that is, when the animal has shown himself perfectly immune against diphtheria—a hollow, carefully sterilised needle is inserted into one of the veins of the neck and a portion of the animal's blood is drawn off into a sterilised vessel. When this blood clots the fibrin and the blood-cells sink in a mass to the bottom



THE PREPARATION OF ANTIDIPHThERIC SERUM

Increasing doses of a broth of dead diphtheria bacilli are injected into a horse until he becomes immune to diphtheria. A final dose of live bacilli is then injected, and the antitoxin is prepared from blood serum drawn off from a vein in the animal's neck. The use of this antitoxin in the Metropolitan Asylums' Board hospitals has reduced in twelve years the deaths from diphtheria from 31 per cent. to 9 per cent. In 2,135 cases inoculated on the first day of the disease no deaths occurred.

of the vessel, leaving the clear pale-yellow blood serum in a layer at the top. This layer of clear, almost colourless fluid is "anti-diphtheritic serum," or "diphtheria antitoxin," now the accepted treatment for diphtheria.

The action of the serum is to neutralise the diphtheritic poison circulating in the blood, rendering it harmless.

**Doseage.** The dose in severe cases is about 8,000 "units," the unit being a convenient amount chosen for purposes of measurement. Should the anti-diphtheritic serum be obtainable only by the third or succeeding day of the illness, the same large dose should be given. On the other hand, if the serum can be administered on the first or second day of the disease, or if the case is patently a mild one, 2,000 or 3,000 "units" may be given. The injections are usually made into the soft tissue underlying the skin of the loin or abdomen. Twenty-four hours after the initial large dose, a second dose, half the size of the first, may be given.

**Preventive Doses.** Besides being an active *curative* measure, anti-diphtheritic serum should also always be used as a *preventive* measure in children who have been exposed to infection. The dose here may range from

500 to 800 "units." Given immediately after a child has been in close contact, either in the home or at school, with a diphtheria patient, this dose will very frequently completely protect the child from infection.

**Diphtheria Antitoxin Rash.** Sometimes a reddish rash, resembling nettle-rash, which may be accompanied by some pain and fever, breaks out a few days or even a week or more after the administration of the antitoxin. This rash is perfectly harmless; and passes off of itself in a few hours, or at the most a day or two. It is only mentioned here so that its appearance may not frighten the mother or nurse who, ignorant of its harmlessness, might otherwise mistake it for a serious symptom.

**ANTIDOTES** are substances which combine with poisons, turning them into harmless substances, or else have a direct effect on the body which counterbalances the effect of the poisonous drugs. Of the first class, acids are the antidotes of alkalies. Thus vinegar, an acid, is an antidote for ammonia, an alkali. In the second class, atropine is an antidote in morphia poisoning because many of its effects on the system are almost directly opposite to those of morphia. Hence an overdose of morphia can be to a certain extent counterbalanced by a dose of atropine.

**ANTIFEBRIN**, another name for Acetanilide.

**ANTIMONY.** The preparations of this drug are not used so much now as formerly. They are all powerful irritants and depress the action of the heart. The two forms in which the drug is most commonly used are tartar emetic (tartrate of antimony and potassium) and antimonial wine.

The dosage is :

Antimonial wine, as an <i>expectorant</i>	..	10 to 30 minims
Antimonial wine, as an <i>emetic</i>	..	2 to 4 drachms

Tartar emetic as a *diaphoretic*, one-twenty-fourth to one-eighth grain ; as a *depressant* of the heart, one-sixth to one grain ; as an *emetic*, one to two grains.

**Uses.** Tartar emetic may be given when an emetic is required in bronchitis, laryngitis, or other affection of the air passages. As an emetic in other cases it cannot be recommended, as it is slow to act and seriously depresses the heart. The same is true of antimonial wine.

Antimonial wine is sometimes useful in fevers to promote perspiration and reduce the temperature. The latter it does only to a slight extent. In the early stages of bronchitis and in croup it relieves the cough, promotes expectoration, and therefore sometimes has a favourable influence on these diseases. But its use should not be continued long owing to its dangerous depressant action on the heart.

**ANTIMONY POISONING.** Poisonous overdoses of tartar emetic (the tartrate of potassium and antimony) are sometimes accidentally taken.

**Treatment.** Free vomiting must be encouraged. A strong mustard and water emetic (a tablespoonful to a tumbler of hot water) should therefore



be given immediately if the patient cannot be made to vomit by tickling the back of the throat with a feather.

Then the patient should be made to swallow a large cup of very strong and bitter tea, for the tannin in this acts as an antidote to the tartar emetic. Repeat the dosing with strong tea every time the stomach is emptied by vomiting, and then, when the patient is quieter, give him the white of two raw eggs beaten up in a cup of milk.

If the patient is collapsed and cold, he should be wrapped well in warm blankets, and hot-water bottles should be applied to the feet. He will probably be better off in bed for a day or two. The diet should be solely of milk, soups, custard and junket, etc., until the stomach fully recovers its normal tone.

**ANTIPERIODICS** are drugs used as remedies in diseases which recur periodically, for example, quinine in malaria. Other antiperiodic drugs in common use are arsenic, eucalyptus, chiretta and salicin.

**ANTIPHLOGISTICS**, an old-fashioned name for remedies which combat fever and inflammation.

**ANTIPYRETICS** are agents which lower the temperature when it has been raised above the normal in disease. A variety of drugs as well as cold and tepid baths, spongings and wet-packs are used for this purpose. In health, so perfect is the mechanism for maintaining the normal temperature, no drug will reduce it unless given in such large doses as to produce collapse.

Some antipyretics act by increasing the loss of heat from the body, such as cold baths and drugs which dilate the surface-vessels or cause perspiration. Others have the effect of restricting the production of heat by the muscles and glands. These include quinine, antipyrin, salicylic acid and others.

It is not always advisable to give antipyretics in fever, for in some circumstances the high temperature is beneficial. But when it rises to a dangerous height (106 degrees and upwards) the most certain antipyretic drugs are phenacetin and antipyrin. These act promptly. Acetanilide, also called antifebrin, is another useful antipyretic. The disadvantage of these drugs is that each of them depresses the heart, antipyrin and acetanilide sometimes very seriously, phenacetin to a much less extent and sometimes very little.



DIPHTHERIA ANTITOXIN RASH

Although this rash, which sometimes breaks out after injection of the serum, looks alarming, it is quite harmless.

They must be administered with great caution, and when cold bathing can be used instead it is to be preferred.

Salicin, salicylic acid, and salicylate of sodium are useful antipyretics in rheumatic fever, but of very uncertain action in other cases of high temperature. The acid and the sodium salt are said to have some depressent action on the heart. Salicin itself has little, if any, such effect.

In malaria quinine is a powerful antipyretic. It reduces fever in other diseases as well, but its action is not so certain as antipyrin, acetanilide and phenacetin.

Other antipyretic drugs formerly very much used are not often employed now. These include antimony, nitrous ether, opium, and alcohol. Aconite and digitalis have also some action in reducing high temperature.

Bathing, sponging and the wet-pack are becoming increasingly popular. Their employment in typhoid fever has yielded very satisfactory results. In many other fevers they are equally as efficacious.

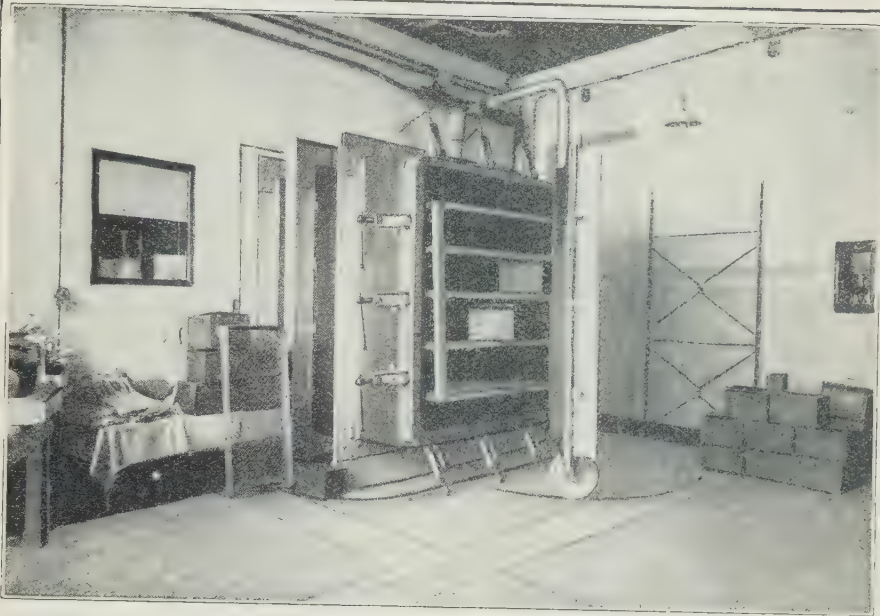
A cold bath for a typhoid fever patient should range from a temperature of 68° down to 58°, according to the physician's discretion. The patient is usually kept in it for ten minutes, but he should be taken out sooner if there are any signs of collapse. In some cases it is better to sponge the patient in bed with cold or tepid water. The cold-water pack is also useful. This is applied as follows: Use four small sheets or two large sheets doubled so as to have four thicknesses. Wring them out of cold water. Remove the patient's sleeping garment and wrap him in the sheets. Keep him so for five to ten minutes.

The doses of the drugs mentioned above are as follows:

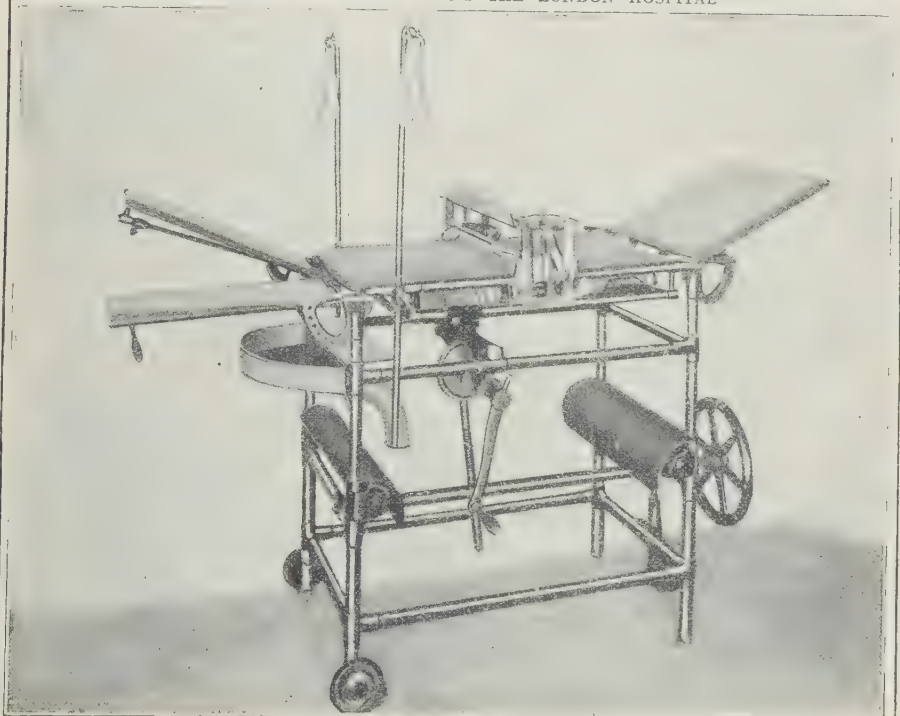
Acetanilide (antifebrin)	..	..	..	1 to 3 grains
Antipyrin (phenazone)	..	..	..	5 " 20 "
Phenacetin	..	..	..	5 " 10 "
Quinine sulphate (as an antipyretic)	..	..	..	5 " 20 "
Salicin	..	..	..	5 to 20 grains
Salicylic acid	..	..	..	5 " 20 "
Salicylate of sodium	..	..	..	10 " 30 "

**ANTIPYRIN** or Phenazone is a drug prepared from coal tar, occasionally used in medicine to bring down the temperature and relieve neuralgic pains. Five grains taken at bedtime is considered a safe dose for a grown person. This may be repeated once if necessary. In poisoning from an overdose of antipyrin, the doctor should be called at once, as strychnine must be given hypodermically. Until his arrival, keep the patient warm with hot blankets and hot-water bottles, and relieve the depression of the heart by giving a half and half mixture of brandy and hot water.

**ANTISEPTICS** are substances used to prevent the growth of micro-organisms. Examples of antiseptics in common use are carbolic acid, one part of the acid to 20 to 40 parts of water; and the perchloride or biniodide of mercury (much more powerful than the carbolic solution), generally used in the strength of 1 part of the mercury salt to 1,000 or 2,000 parts water.



THE STERILISING ROOM AT THE LONDON HOSPITAL



AN ASEPTIC OPERATING TABLE

INFECTION AVOIDED NOT DESTROYED : MODERN HOSPITAL ASEPSIS

The mercury antiseptics and carbolic acid are, of course, *highly virulent poisons*, and the greatest care must be taken in their use. Household bottles containing these disinfectants should be of a special, easily recognised shape, and should always be carefully locked up. Care must also be taken to prevent domestic animals from drinking any of the prepared antiseptics.

A much weaker but sometimes very useful home antiseptic is boracic acid. A saturated solution (obtained by mixing an excess of the acid in water and pouring off the clear fluid which contains as much boracic acid as will dissolve) is the strength commonly used for a gargle or throat spray. As an eye-wash, one part of the saturated boracic solution should be diluted with five parts of warm water.

**ANTI-SCORBUTICS** are agents which prevent the development of scurvy. Of these, lime juice is one of the best. Vinegar has considerable anti-scorbutic power. Nearly all vegetables are more or less preventive of the disease, the potato being one of the most efficacious. Jams, parsnips, turnips, and cabbage are also of use.

As preferable to lime juice in scurvy, Sir Almroth Wright recommends 30 to 60 grains of Rochelle salt with 20 grains crystallised calcium chloride three times a day until the urine becomes alkaline.

**ANTI-TOXINS** are substances which have the power of neutralising the poisons of bacilli circulating in the blood. The anti-toxin to be used in the cure of any particular disease is obtained from the blood of a living animal which has been rendered immune against that particular disease by injecting into its system increasing doses of the poison or toxin of that disease.

The virtue of the tetanus anti-toxin and the diphtheria anti-toxin or anti-diphtheritic serum lies in their contained anti-poisons, which render inert or neutralise the poisons produced in the blood in tetanus or diphtheria respectively. (See ANTI-DIPHTHERITIC SERUM.)

**ANTRUM** is the name given to a hollow cavity in a bone, as, for example, the cavity in the upper jaw between the eye and the mouth (antrum of Highmore) or the similar cavity in the massive bone behind the ear (mastoid antrum).

The former communicates with the nose through a small opening. Sometimes it becomes infected by germs from the nose and pus forms, causing the cheek and eyelid to swell and giving rise to intense pain. The pus escapes into the nose, but when the opening closes, as sometimes happens, the pus accumulates in the cavity. A surgeon should at once make an incision and liberate the pus. Tumours of various forms, including cancers, may develop in the antrum of Highmore.

The mastoid antrum is also liable to suppurate as a result of inflammation in the middle ear, calling for immediate operation.

**ANTS, BITES OF.** (See BITES AND STINGS.)



**ANURIA** is a term used to describe a serious kidney condition in which little or no urine is passed for long periods. As anuria is not a disease in itself, but is a very grave symptom of advanced kidney disease, its treatment is included in that of the condition in which it occurs. (*See Treatment of BRIGHT'S DISEASE.*)

**ANUS**, the external opening of the rectum or bowel.

**ANUS, ARTIFICIAL.** Sometimes in acute intestinal obstruction, where a kink in the bowel, a constricted rupture, or a cancerous growth in the abdomen prevents the waste matter resulting from digestion from passing normally through the back passage, an artificial outlet has to be provided. This is done by the surgeon opening up the abdomen, perforating the intestine above the constriction, and sewing the cut edges to a small opening left in the abdominal wall. This opening is known as an artificial anus.

**ANUS, FISSURE OF.** As a result of chronic constipation the delicate mucous membrane which covers the muscles forming the anus (the lower opening of the bowel) becomes torn. This very painful condition, known as fissure of the anus, may persist indefinitely because the stretching at stool of the muscles which guard the orifice prevents the healing of the torn surfaces.

A little ointment of galls and opium, applied several times a day to the part, and unceasing care to keep the motions in a soft, almost unformed condition for a few days, will in some cases effect a cure. A teaspoonful of equal parts of confection of sulphur and confection of senna is the best purgative here.

If a cure is not obtained in a week or ten days by these means the patient should put himself in the hands of a competent surgeon at once, so that the simple operation of stretching the anal muscles while under an anæsthetic may be carried out. This operation practically always results in perfect cure.

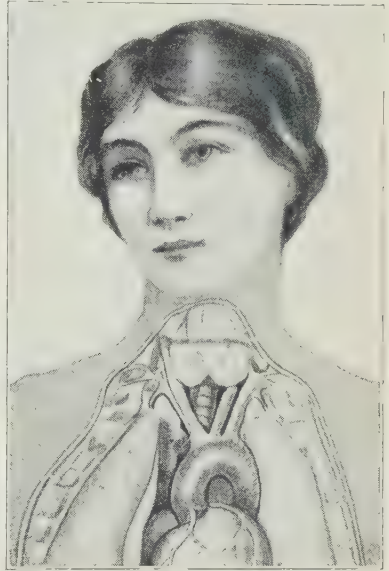
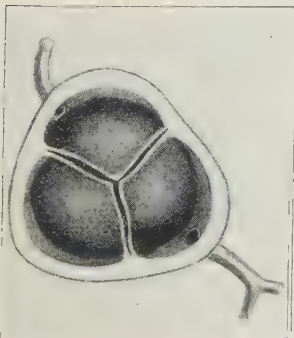


DIAGRAM SHOWING THE AORTA RISING FROM THE HEART



CROSS SECTION OF THE AORTA, SHOWING ITS VALVES

**AORTA.** The large vessel which, rising from the main chamber of the heart (the left ventricle), passes down in front of the backbone, giving off the

secondary arteries which distribute the blood to all parts of the body. The aorta may be the seat of atheromatous degeneration, or an aneurism may develop at any portion of its course. Rupture of the aorta sometimes occurs, the result being instant death.

**APERIENTS.** Under this name are grouped the milder purgatives, such as cascara, castor oil, sulphur, senna, rhubarb, etc. Their effect is to produce one or more soft or semi-fluid actions of the bowels.

Doses of common preparations of purgatives in general use are :

Dry extract of cascara sagrada	.. ..	2 to 8 grains
Liquid extract of cascara sagrada	.. ..	$\frac{1}{2}$ to 1 drachm
Castor oil	.. ..	1 teaspoonful to 8 teaspoonsful according to age, etc.
Castor oil mixture	.. ..	2 to 4 tablespoonsful
Flowers of sulphur	.. ..	20 to 60 grains
Confection of sulphur	.. ..	1 to 2 teaspoonsful
Milk of sulphur	.. ..	20 to 60 grains
Sulphur lozenge	.. ..	1 to 2 at bed-time
Confection of senna	.. ..	1 to 2 teaspoonsful
Compound mixture of senna	.. ..	2 to 4 tablespoonsful
Compound liquorice powder (of which senna is the most active ingredient)	.. ..	1 to 2 teaspoonsful
Rhubarb	.. ..	3 to 10 grains, if dose is to be repeated; 15 to 30 grains, single dose
Infusion of rhubarb	.. ..	1 to 2 tablespoonsful
Compound rhubarb pill	.. ..	4 to 8 grains
Compound rhubarb powder	.. ..	20 to 60 grains
Compound tincture of rhubarb	.. ..	$\frac{1}{2}$ to 1 teaspoonful in repeated doses, or single dose of 2 to 4 teaspoonsful

**APEX.** As applied to the lung, this term means the upper extremity which reaches to a point about two inches above the collar bone. The apex of the heart is normally situated a little to the inner side of the left nipple at the level of the fifth rib, but may be shifted out of place in diseased conditions of the heart, as in arterio sclerosis (*see* page 136).

**APHASIA** is loss of the power of speech, caused by injury to the speech centres in the brain. When a brain vessel bursts (*see* APOPLEXY), or is blocked by a clot carried to it in the blood stream (Embolus), or the passage of blood through it is stopped by clotting within the vessels (Thrombosis), sudden loss of speech may occur. The duration of the loss of speech depends on the permanency of the cause. Usually after non-fatal apoplexy normal speech is regained in time. In certain cases, however, permanent blurring of the pronunciation remains. Treatment is included in the treatment of the cause of the aphasia.

**APHONIA** means loss of voice due to some deformity or disease of the vocal cords.

**APHTHOUS FEVER.** A name given to Foot and Mouth disease when it occurs in human beings: also called epidemic stomatitis. It is usually transmitted from cattle to man in milk, sometimes in butter and cheese. It begins with a general feeling of illness, shivering fits, and feverishness. Then blisters

form on the tongue and on the inside of the lips. The mouth is swollen and hot. Sometimes a fine rash appears on the skin, especially the hands.

The disease is generally mild, and lasts only for about a week. It is very seldom fatal.

**Treatment.** The food should be liquid, principally milk, for a few days. Cleanse the mouth frequently by syringing it with chlorate of potash solution, 20 grains of the potash to 4 ounces of warm water.

It is rarely necessary for the patient to be confined to his bed.

A somewhat more agreeable and more effective gargle than the plair chlorate of potash is the following :

R Potassium chlorate .. 2 drachms  
Boric acid .. 2 drachms  
Glycerine .. 1 ounce  
Water .. to make 10 ounces

Add a little of the solution to an equal amount of warm water, and use as a gargle half a dozen times a day.

**APNCEA** is the name given to the temporary cessation of breathing which sometimes follows after one or two deep breaths, which have overcharged the blood with oxygen. Sometimes the term is used to signify asphyxia, or stoppage of breathing and pulse which results from an insufficient supply of oxygen.

**APOMORPHINE**, or apomorphine hydrochloride, is the most promptly acting and powerful of the emetics. Used in the form of a hypodermic injection or given by the mouth it acts on the stomach not directly but through the brain. It has the advantage that it can be administered in cases where emetics by the mouth would prove too irritating to the stomach.

Given by the mouth it acts as an expectorant in chronic bronchitis, reducing the viscosity of the inflammatory secretion.

The doses for an adult are :

As an emetic, hypodermically	one-twentieth to one-tenth of a grain
As an emetic, by the mouth	one-tenth to one-quarter of a grain
As an expectorant .. ..	one-sixty-fourth to one-thirty-second of a grain, which correspond to $\frac{1}{2}$ to 1 drachm of the syrup. (Syrupus apomorph. hydrochlor.) (B. P. C.)



DIAGRAM SHOWING THE APEX BEAT

The inner outlined heart shows the normal position of the apex where the heart-beat is felt. In disease when the heart is enlarged the apex beat may be displaced, as shown by the outer dotted lines.

**APOPLECTIC STROKE, OR APOPLEXY**, is a loss of consciousness due to a sudden interruption to the normal blood circulation through the brain.

The commonest cause is the bursting of a brain vessel, the walls of which have become degenerated and brittle. Conditions conducing to apoplexy are continuous hard drinking, heart or kidney diseases, years of immoderate eating, sudden severe physical exertion, violent mental emotion, etc. Exposure to a very hot sun, particularly when the head and neck are insufficiently protected, may also bring on apoplexy. The condition is commoner in men than women and is not often seen before middle life. An attack may be immediately fatal, or the patient, after remaining unconscious for hours or days, may gradually recover, though paralysis of one side of the body, brain disturbances, and impaired speech may persist indefinitely.

**Symptoms.** The patient, often with no warning at all, suddenly loses consciousness. His breathing is laboured, and the cheeks are puffed out with each expiration. A history of the seizure may be necessary to prevent one from mistaking the stroke for profound alcoholic intoxication.

Opium poisoning is another condition always to be considered in diagnosing apoplexy. The state of the pupils of the eyes is often a great help here, for in opium poisoning they are contracted down to little more than pin points, while in drunkenness they are usually widely dilated. In apoplexy the pupils may be small (though not so contracted as in opium poisoning); they are frequently unequal in size, and they are insensible to light. In the normal eye, if it is suddenly shaded from the bright light, the pupil can be seen to dilate rapidly. Again if, after being shaded for a moment, a lighted candle be suddenly brought close before the eye, the pupil will immediately contract. In apoplexy this sensitiveness to light is lost.

Usually it can be determined, by very gently lifting the arms and legs a few inches from the ground, and then letting them drop, that the limbs on one side seem looser and the muscles more flaccid than those of the other side. This suggests some degree of paralysis, and further bears out the diagnosis of apoplexy.

Besides the bursting of a brain vessel, apoplexy may result from the sudden plugging of a brain vessel by a small clot or a fragment from a diseased heart valve which, breaking away from its point of attachment, is whirled along in the blood stream until it blocks a brain artery. [See PLATE]. In this type of apoplexy the symptoms come on with great suddenness and without any previous warning. The outlook in these cases (if the patient does not die at once) is considered somewhat better than in those where the apoplexy is due to the bursting of a brain vessel.

A third type of apoplexy, usually seen in old people whose blood vessels, either through age or disease, have undergone widespread degeneration, is





### THE BRAIN AND HEART IN APOPLEXY

In the cross-section of a brain the effects of the bursting of a large brain artery are seen. Apoplexy is also frequently caused by blockage of a brain artery with a fragment from a diseased heart valve or from a patch of atheroma in the aorta. This cuts off the local blood supply and leads to clotting (see diagram at bottom on the left). When the heart valves are diseased cauliflower-like growths may appear as shown on the valves at the top of the heart diagram. Above these diseased valves can be seen an atheromatous patch on the wall of the aorta. Apoplexy is also caused by clotting in an artery (thrombosis) as shown at the left hand bottom corner.



the result of clotting gradually taking place in a brain artery and so depriving a certain part of the brain of its blood supply. The onset here is usually gradual.

**Preventive.** How so to regulate one's life as to minimise the danger of apoplexy is one of the problems of this strenuous age. The disease is without doubt commonest in people who constantly work at high pressure, who regularly eat more than is good for them (particularly meats and rich, highly-seasoned foods), who drink more or less alcohol, and who are careless about keeping their bowels in regular order.

There are certain warnings, such as dizziness coming on at the same time for several days running, constant headache, numbness, or a slight loss of strength of an arm or leg, which any middle-aged or elderly person, whether short, heavy and thick-necked, or tall and slim, should mark as danger signals. Particularly if continuous hard work and high living, neglect of taking holidays, chronic alcoholism, or kidney or heart disease have left him with bounding hard pulses at the wrists, he should call a halt at once. The serious seizure will be only a question of time.

**Treatment During Attack.** Loosen everything about the patient's throat, turn his head a little to the side to relieve his breathing, and *prevent anyone from moving him until the doctor comes*. Many a life has been lost from apoplexy through over-zealous helpers increasing the outpouring of blood into the brain tissues by carrying the victim upstairs, or lifting him into bed, or undressing him, etc.

Beyond placing an ice-bag on the head, there is absolutely nothing to be done until the physician's arrival.

During convalescence the physician in charge may order massage, or electric treatment in the hope of remedying the remaining paralysis. This very often passes off entirely, but a too hopeful prognosis should not be given at the start.

The rules for reconstructing one's ways of life, laid down above for the man who has had a warning of approaching apoplexy, apply with even greater force to anyone who has already survived a first stroke. A quiet, retired life, freedom from worry and excitement, gentle daily exercise, strict attention to the regularity of the bowels, and above all a light, easily-digestible, non-meaty diet, and the absolute abstention from alcohol are the essentials. The slightest threat of apoplexy makes it imperative that he should go to bed at once and make up his mind to stay there for a day or two. Calomel in quarter grain doses, one every half hour until two grains are taken, and a dose of Epsom salts in the morning (a heaping teaspoonful in a wineglass of water) start the treatment by flushing out the digestive tract and so relieving the dangerous pressure in the arteries.

The diet for the next forty-eight hours should be of almost starvation quantities, and should consist of custards, junkets, soft-boiled eggs, and

milk, etc. To lower the blood pressure further, the patient may take ten grains of potassium iodide in a half-glass of water three times a day.

If all the symptoms which raised the alarm have passed off in forty-eight hours, the patient may get up, but he should fully understand that from now on he is a marked man. If he does not radically change his whole manner of living by taking lighter, less stimulating foods, by giving up alcohol in every shape and form, by doing less arduous brain work, and by taking more holidays, another stroke is inevitable.

**Diet in Apoplexy.** For the first forty-eight hours after the stroke, and in particular if he does not quickly recover consciousness, the patient has no need of any food of any kind. After the second day, however, if the sufferer is still unconscious (and therefore unable to take food by the mouth), resort must be made to administration of nourishment by the rectum.

Before attempting to give food by the rectum, the bowels should first be thoroughly cleared out by two or three preliminary injections of plain warm water. This accomplished, the nutrient enema, which should not be greater in amount than five or six ounces, should be allowed to flow gently into the bowel through a long rubber tube, which should be inserted about nine inches into the bowel. The patient during the injection of the enema should lie on his back or on the left side, the hips being slightly raised on a pillow. The temperature of the fluid should be about 98° F., that is, about blood-heat. Three, or perhaps four, nutrient enemata are all that the bowel can stand in the twenty-four hours without becoming irritable. The fluid should never be forced in with a syringe, but should be poured into a funnel attached to the end of the tube inserted into the bowel. When the funnel is lifted about two feet above the patient's abdomen, the force of gravity will be sufficient to cause the food enema slowly to enter the bowel.

The following nutrient enemata are all suitable in cases of apoplexy where their use will probably have to be continued only for a few days. The salt is added because it helps the bowel to absorb the enema.

(1)					
Pancreatised milk	..	..	..	..	4 ounces
Pancreatised beef juice	..	..	..	..	1½ ounces
Common salt	..	..	..	..	1 teaspoonful
(2)					
Pancreatised milk	..	..	..	..	4 ounces
Brandy	..	..	..	..	¼ ounce
Raw egg beaten up	..	..	..	..	1 ounce
Common salt	..	..	..	..	1 teaspoonful
Water	..	..	..	..	1 ounce
(3)					
Pancreatised milk	..	..	..	..	4½ ounces
Dextrose	..	..	..	..	1 ounce
(4)					
Pancreatised milk	..	..	..	..	3 ounces
The white of 2 eggs	..	..	..	..	1 ounce
Whisky	..	..	..	..	¼ ounce
Grape sugar	..	..	..	..	1½ ounces
Water	..	..	..	..	1½ ounces



As soon as the patient recovers consciousness and is able to take nourishment by the mouth, the nutrient enemata should be stopped, and small quantities (not more than two or three ounces at a time) of milk, milk beaten up with raw egg, or milk and lime-water may be given by mouth. As the patient gets stronger, milk puddings, custards, junkets, gruels, orris root, Horlick's Malted Milk, etc., may be added. Alcoholic beverages of all kinds should be avoided.

After the immediate effects of the stroke have passed off, the diet the patient should restrict himself to for the rest of his life deserves careful consideration. In the first place, if the stroke, as is frequently the case, is the result of high blood pressure in chronic Bright's disease, heart disease, or arterio sclerosis, he should map out his dietary so as to cause the least amount of wear and tear on the injured kidneys or heart, and at the same time to check as much as possible the tendency to high blood pressure.

To accomplish these ends he should eat small meals, avoid all rich and stimulating foods, and take plenty of time over his meals. Generally speaking, he should be very sparing of meats of all kinds, particularly game and red meats. The bulk of his dietary, in fact, should be composed of milky and vegetable foods, cereals and fruits. He should cut down to about two pints the total amount of fluids of all kinds taken in the twenty-four hours, and should drink such fluids chiefly between meals, taking little or nothing at meal times.

Alcohol in every form, whether wine, spirit, beer, or liquor, should be absolutely given up.

All idea of "doing himself well," whether habitually or on special occasions, should be given up forever by the man who has been lucky enough to weather his first stroke of apoplexy.

**APPENDICITIS.** An inflammatory disease of the vermiform appendix, a small blind tube of gut leading off from the junction of the large and small intestines.

Simple acute appendicitis, gangrenous (where the appendix sloughs off) and suppurative (in which an abscess forms about the appendix) are the commonly described varieties. A mild form in which the patient recovers with no other treatment except starvation or, rather, a water diet and rest in bed for a few days, and a relapsing form, in which the patient has recurring attacks of pain about the appendix, are also recognised.

**Causes.** Constipation, the eating of indigestible food, and exposure to chill are the common causes. The disease is met with at all ages, but is commonest in young adults.

**Symptoms.** The four classic symptoms, which as a rule come on suddenly, are (1) pain, perhaps spread all over the abdomen or centred about the navel at the start, but soon becoming fixed in the right lower corner of the abdomen; (2) nausea and vomiting; (3) fever; and (4) tenderness to the touch over the lower right corner of the abdomen.

The muscles of this side of the abdomen may be rigid and board-like to touch. The patient, to relieve the pain, usually lies on his back with the right leg drawn up, so as to lessen the tension of these muscles.

**Treatment.** In any case of sudden pain in the appendix region (the lower right-hand quarter of the abdomen—*see* diagram), with vomiting and even slight fever, a surgeon should be called in at once. Every year thousands of lives are lost by patients "waiting to see if they are not going to get better," until a gangrenous appendix or a bursting abscess infects the whole abdominal cavity, soon leading to a fatal general inflammation of the lining membrane of the abdomen (peritonitis).

The patient should be put to bed at once, and given no food or medicine till the doctor sees him. An ice bag may be gently placed over the painful region of the abdomen. Teaspoonsful of cracked ice may be taken to relieve the vomiting. No medicines should be given to open the bowels, as the increase of the normal movements of the intestine which purgatives cause, might be just enough to tear down the newly-formed adhesions which were walling off the inflammation from the general abdominal cavity.

Whether or no an operation for removing the appendix should always be performed in every case, however mild the symptoms may be, immediately a diagnosis is made, is still a matter of dispute among surgeons. The weight of modern opinion, however, is that *immediate* operation is the safest course, since an appendix once attacked by inflammation can never be guaranteed as free from risk, even if it appears completely to recover from an attack. Moreover, however slight any particular attack may *appear* to be at the start, it frequently develops into a dangerous one in a few days. If abscess formation has taken place, or gangrene is suspected, immediate operation is imperative. A person who has once come through an attack of appendicitis without having the appendix removed can never be considered safe from subsequent attacks. Therefore it is advisable, even though an apparently complete recovery from the acute attack has been obtained by medical means, to have the appendix removed during the next two or three months. The death rate from these "interval" operations is practically nil, and the removal of the once diseased appendix relieves the patient of what statistics show is a really serious risk of subsequent attacks. It has been well said that no deaths ought to occur from appendicitis. It is not operation that is dangerous, but the want of operation.

The best way to avoid appendicitis is to train the bowels to a regular daily and efficient action, and to keep to regular meal-times and a moderate diet of easily digested and not too stimulating foods. Plenty of fresh vegetables, fresh and boiled fruits, porridge, salads with oil, and wholemeal or standard bread should be included in the diet to ward off constipation without having recourse to purgatives.

Strong purgatives in themselves tend to lead to inflammatory conditions of the bowels, and so should be avoided, especially by anyone who has had even a threat of appendicitis. A teaspoonful of equal parts of confection of sulphur and confection of senna at bedtime is a harmless and effective purgative. If stronger measures are required, an enema of half a pint or a pint of warm water and soap-suds may be given.

The part that grape seeds and date stones play in causing the disease has been greatly over-rated. Out of the tens of thousands of cases operated on in the last few years, not half a dozen could be attributed to these unjustly celebrated causes.

The following table, constructed from statistics supplied by an Investigation Committee recently appointed by the Berlin Medical Society, show the ages most open to attack, and the mortality rate at these ages :

Age	Percentage of cases	Mortality Percentage
1-10	9.3	17.4
10-20	34	5.3
20-30	29.6	10
30-50	27.1	21
50-70	27.1	80

This table shows that although two-thirds of all the cases occur between the ages of ten and thirty, this is the time of the lowest mortality. On the other hand, while the disease attacks a relatively small number of children, the mortality rate is high. In the same way from middle life on to old age appendicitis, though decreasing in frequency, increases rapidly in mortality.

The fact that the earlier the operation the less is the likelihood of a fatal termination was also strikingly confirmed in this investigation. Out of nearly three thousand cases, the following results were obtained :

Day of operation	Mortality percentage
First day .. .. .	0.9
Second day .. .. .	7
Third day .. .. .	10
Fourth and after .. .. .	18.8



WHERE PAIN IS FELT IN THE EARLY STAGES OF APPENDICITIS

Occasionally the early pain is felt at (1). Usually it is about the umbilicus (2), quickly moving to (3), where it settles.

**Appendicitis in Children** is by no means uncommon. From 8 to 12 per cent. of cases are said to occur before the tenth year.

Even more than in adults does the future course of the disease depend on early accurate diagnosis. An unusually large proportion of children fail to recover because the mother or nurse, not recognising the importance of the early symptoms, perhaps forces the child to be up and about when he ought to be flat on his back in bed waiting for the surgeon's arrival.

In the ordinary, very acute case, the sudden abdominal pain, with tenderness in the lower right abdominal region, stiffness of the abdominal wall, a pinched, drawn expression on the face, and the thin, rapid pulse at the wrist warn even the most optimistic mother that something is seriously wrong with her child.

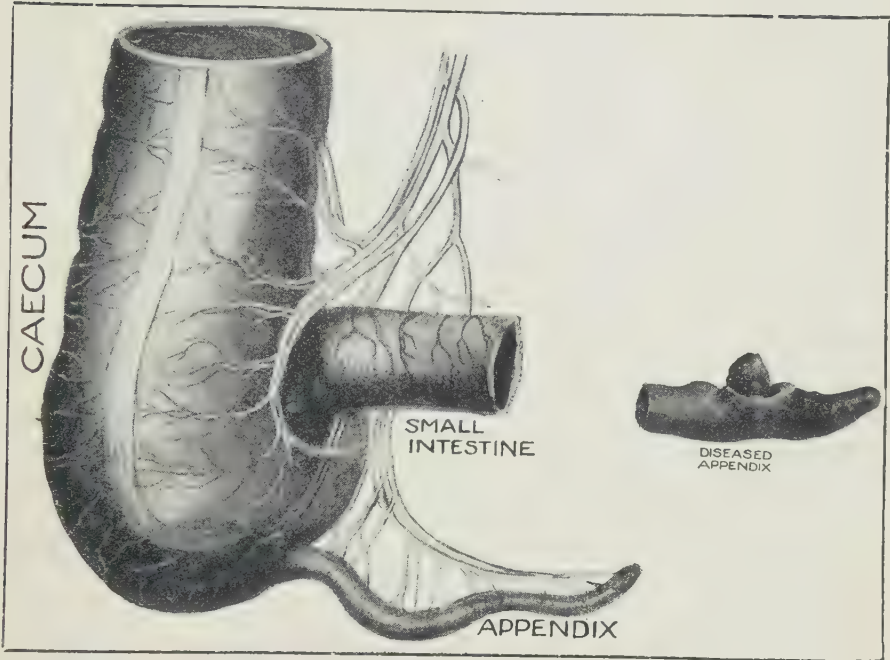
In a large proportion of cases, however, there may be nothing explicit to impress on the untrained mind the arising danger. The youngster, perfectly healthy one day, on the next may complain vaguely of "not feeling well" and slight stomach ache. The bowels may fail to move that day, and there may be slight headache. After the mid-day meal the child may be sick and complain of stomach ache, pointing to the navel or to the lower right quarter of the abdomen as the seat of the pain. If the mother, thinking that it is only a case of slight indigestion, gives the child a brisk purge, tells him not to be a "molly," and sends him out to play, the results may be very serious. The abnormal movements of the bowels caused by the purgative and the being up and about may be just enough to tear down the protective wall of lymph with which Nature is endeavouring to shut off the developing appendix abscess from the rest of the abdominal cavity. By the time the fever, the rapid, thready pulse, and the unmistakable appearances of severe illness has brought the surgeon to the patient's bedside, it may perhaps be too late for a successful operation.

It is the purgative here which has done the harm. To be on the safe side, a purgative should never be given to a child complaining of sudden pain in the abdomen, constipation, and sickness. If gentle, fairly deep pressure with the palm of the hand over the appendix region is in the least painful, a doctor should at once be summoned before purgative or medicine of any kind is given.

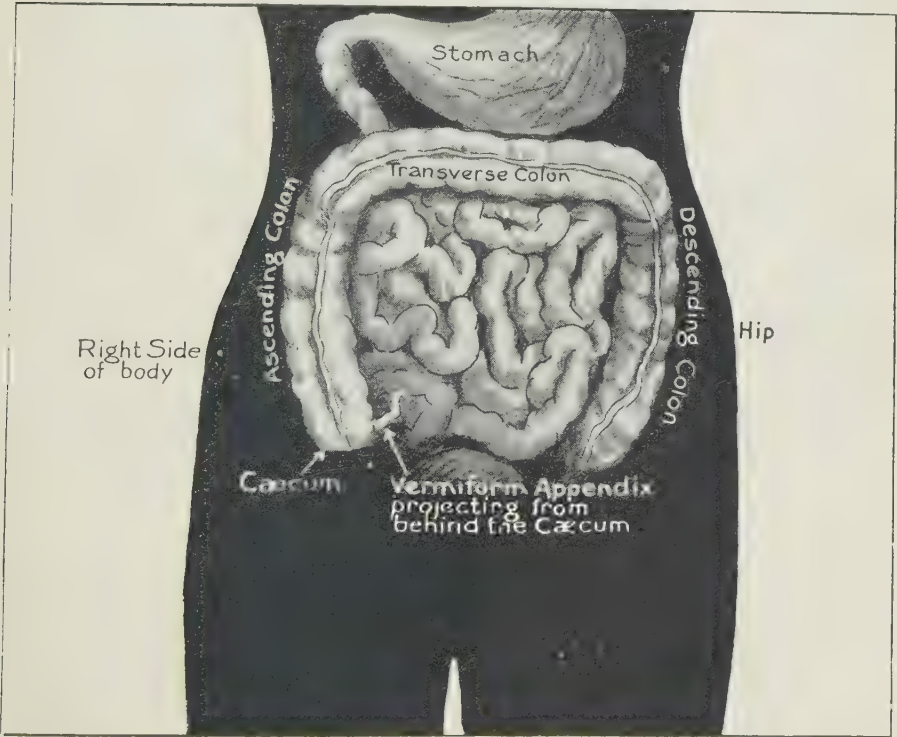
The fact that the temperature is normal for the first day or two is no proof that appendicitis is not threatening. The younger the child, the more acute the onset, and the later the operation, the less the chance of recovery. Where, however, purgatives have not been given, and the operation is performed within forty-eight hours of onset, modern surgery has reduced the death rate down to about 5 per cent.

Until the surgeon's arrival the little patient should be kept at rest in bed, with an ice-cap over the appendix region. No food or medicine of any sort





THE APPENDIX IN HEALTH AND DISEASE



THE POSITION OF THE APPENDIX

should be given, though the patient may have cracked ice to suck, or tablespoonsful of water at frequent intervals to quench thirst.

Operation at the earliest possible moment after the diagnosis has been made is even more important in children than in adults. In the first place, the tendency of the inflammation is not to be "walled-off," as so frequently happens in adults; and, in the second place, the child's system seems less able to cope with the poisonous products which are set free by any suppurative condition.

When an ordinarily healthy adult develops appendicitis the inflammation of the appendix, as a general rule, does not go on to abscess formation until sufficient adhesions have been formed in the surrounding tissues to wall off the abscess contents from the rest of the peritoneum. In other words, although the site of the appendix may be a fully formed abscess, it is strictly localised, and the greater part of the abdominal cavity is unaffected. The danger in such a case, of course, is that either before or during the operation these beneficial adhesions may give way and allow the suppurating matter to infect the surrounding abdominal contents. If this happens a general peritonitis, too often fatal, is the result.

In a young child this beneficial walling off of the appendix frequently does not take place soon enough to protect the general abdominal cavity from infection. Hence even more important than is an early operation in adults is immediate intervention by the surgeon at the first true signs of the disease in a child.

In operations performed on the first day of the attack the mortality in grown people and children is about the same. If, however, the operation is delayed past the second day, the mortality rate in children is much the higher.

**APOTHECARIES WEIGHT**, a special system of measuring, used in the dispensing of medicine. The following are the tables for solids and fluids:

## SOLIDS

20 grains	..	..	..	..	..	make	1 scruple
3 scruples or 60 grains	..	..	..	..	..	..	1 drachm
8 drachms	..	..	..	..	..	..	1 ounce
12 ounces	..	..	..	..	..	..	1 pound

## FLUIDS.

60 minims	..	..	..	..	make	1 fluid drachm
8 fluid drachms	..	..	..	..	..	1 fluid ounce
20 fluid ounces	..	..	..	..	..	1 pint (imperial)

A minim is commonly considered to equal a drop, a drachm (either solid or fluid) roughly corresponds to one teaspoonful, and two tablespoonsful are the equivalent of one ounce.



## THE FRAMEWORK OF THE BODY

The bones which make up the framework of the body are held together by joints of different sorts which allow of widely varying different ranges of motion.

The skull, which contains 22 bones in all, includes the cranium which contains the brain, and the bones which form the framework of the face.

The vertebral column, which acts as a hinged and pliable tube down the centre of which runs the spinal cord, is made up of twenty-four true vertebrae and the sacrum and the coccyx which corresponds to the tail of animals.

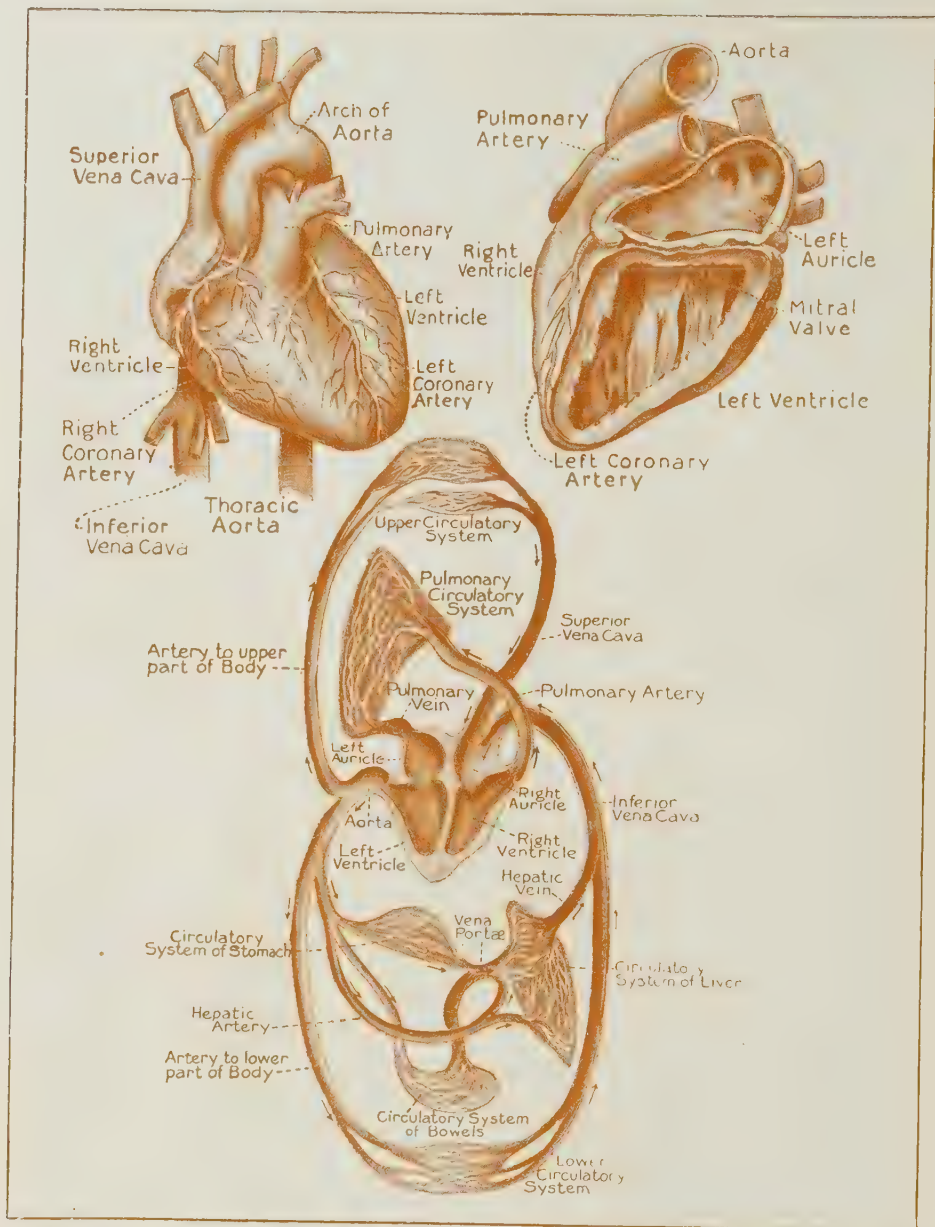
The thorax, the bony box or cage protecting the heart and lungs, is made up of the twelve dorsal vertebrae with the twelve ribs on each side and the sternum or breast bone in front.

The upper extremities consist of the shoulder-blade or scapula, the collar-bone or clavicle, the humerus or upper arm bone, the two fore-arm bones (radius and ulnar), and the 27 bones of the hand and wrist.

The pelvis is composed of the two hip bones, together with the sacrum and coccyx. The female pelvis is larger in all diameters than the male. (The skeleton shown here is female.)

The bones of the lower extremity, which is joined to the pelvis by the head of the thigh bone (the femur) making a ball and socket joint at the acetabulum, (see page 17) are the two bones of the leg, the tibia and fibula; the patella or knee-cap; and the 26 bones of the ankle and foot.



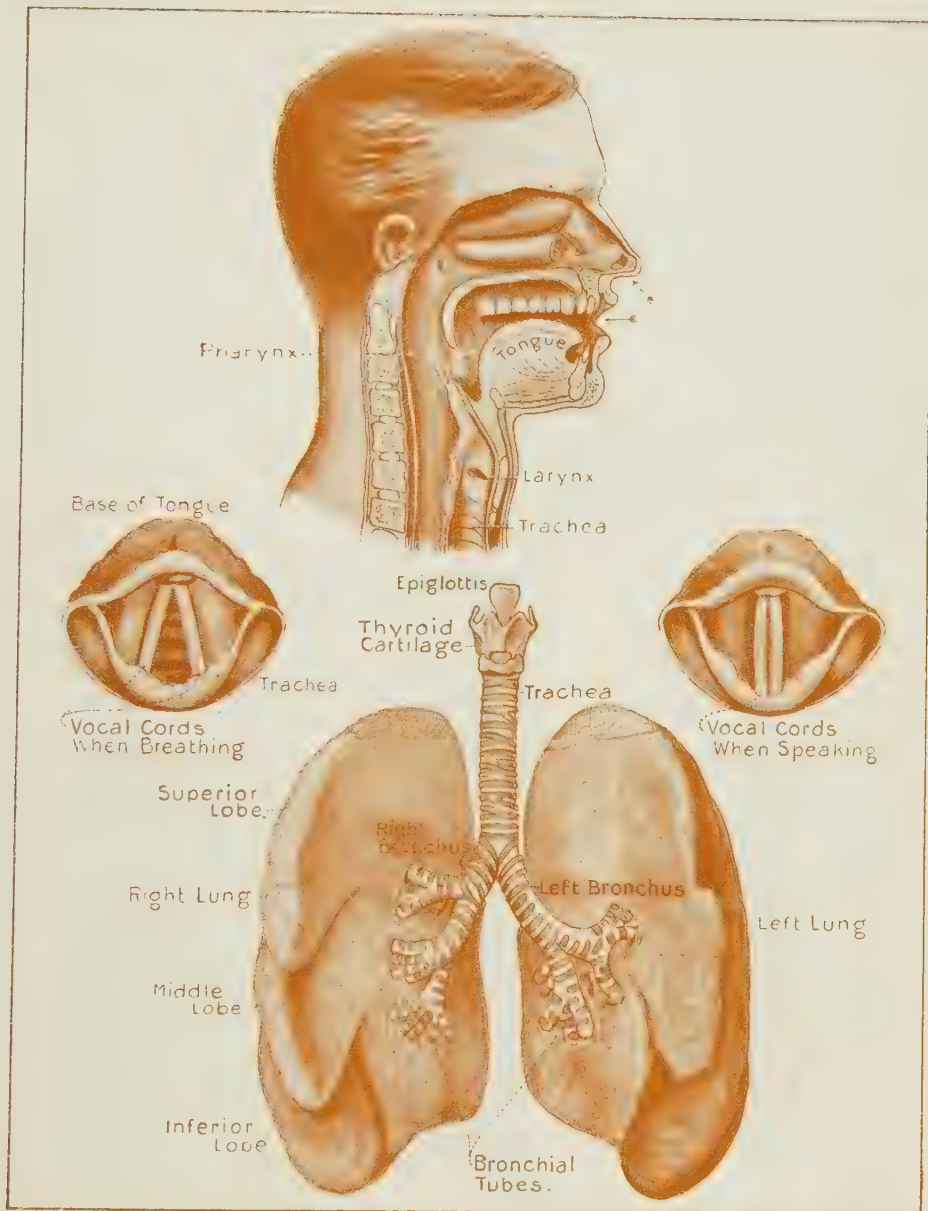


## THE BLOOD SUPPLY OF THE BODY

The heart, the main pump of the circulatory system, rests on the diaphragm between the two lungs. The heart is enclosed in a smooth, moist membrane or sac, the pericardium, which allows it to dilate and contract without friction against the adjoining parts. There are four cavities in the heart, the right and left auricle, and the right and left ventricle. The auricles, which are thinner walled, collect blood from the veins, while the thicker and stronger walled ventricles force the blood into the arteries. The left auricle pumps the purified blood into the left ventricle, the valve between the auricle and ventricle opening to allow this passage. When the left ventricle is full the valve between its chamber and that of the auricle closes, the ventricle itself contracts down, and the blood is pumped out through the aorta to supply all the tissues of the body.

After leaving the left ventricle through the aorta the purified blood is carried to the head, arms, trunk, and lower limbs, etc. Finally, after being deprived of its oxygen as it passes through the tiny end-arteries, or capillaries, of the tissues it has to nourish, it is collected up in the veins and is emptied into the right auricle. Passing from the right auricle to the right ventricle, this impure blood, which is of a dull purplish colour, is pumped into the lungs, where it is deprived of its waste gases and once more takes up a fresh supply of oxygen. Bright scarlet in colour again, it now is collected and carried to the left auricle by the pulmonary veins. From the auricle it passes through the mitral valve to the left ventricle, whence it is once more pumped out through the aorta to supply the tissues.





## THE AIR PASSAGES OF THE BODY

The organs of respiration are the nose, throat, larynx, wind-pipe or trachea, and the two lungs. On the outer walls of the nasal cavities are three shelves known as the turbinated bones, the surfaces of which contain blood-vessels to heat the air as it passes through the nose. The mucus which constantly forms on the lining membrane of the nose and the little hairs in the nostrils, act as screens, preventing dust being breathed into the lungs.

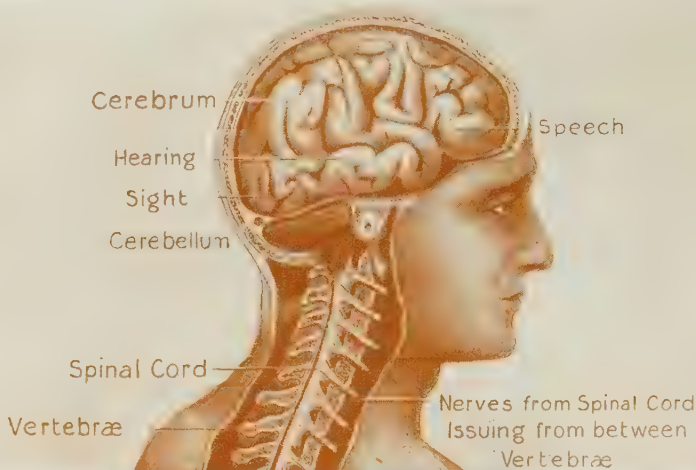
The pharynx is the cavity behind the nose, mouth, and larynx.

The larynx forms a prominence in the throat known as the "Adam's Apple." It contains the vocal cords, the vibrations of which, as air from the lungs passes through them, give rise to voice sounds. The epiglottis is a cartilaginous curtain above the larynx which blocks up its entrance when food is being swallowed.

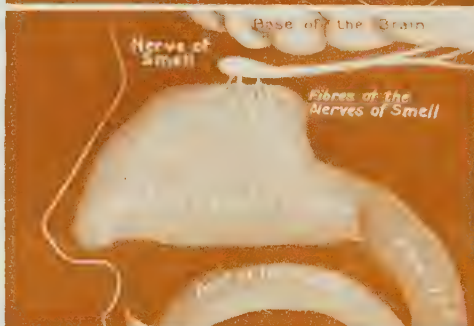
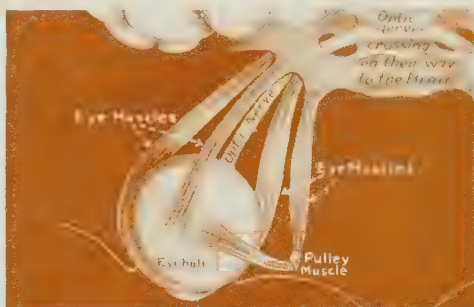
The trachea or windpipe is a continuation of the larynx. Shortly after entering the chest it divides into two main branches, the right and left branches, which lead to all parts of the lungs.

The lungs, two spongy, air-filled organs, take up most of the space in the chest-box or thorax.

The smallest end-branches of the bronchial tubes open into collections of tiny sacs known as the air vesicles, in the walls of which the end-branches of the capillaries ramify. Here the impure gases in the blood escape through the vessel walls into the air vesicles, while the oxygen breathed into the lungs is taken up in the same way by the blood in the vessels.



THE BRAIN AND SPINAL CORD



OUTLINE DIAGRAM OF MAIN NERVES THE FIRST AND SECOND NERVES—SIGHT AND SMELL.

## THE NERVOUS SYSTEM

The nervous system consists of (1) the brain; (2) the spinal cord; (3) the nerves which run off from these structures; and (4) the sympathetic system. The chief mass of the brain is known as the cerebrum, or fore-brain, the small mass at the lower part being termed the cerebellum, or little brain.

From the brain, which is contained within the bony skull, twelve pairs of cranial nerves proceed. The most important of these are the first or nerve of smell, the second (sight), eighth (hearing), and twelfth (taste). The fifth, one of the most important nerves of sensation, has three main branches running to the orbit and forehead, the jaws and teeth, and the skin of the face.

Six of the twelve pairs of cranial nerves govern the movements of different parts (motor nerves), others have to do with the special sense organs, taste, smell, hearing, and sight (sensory nerves), and others are a combination of motor and sensory nerves.

The spinal cord is a continuation of the brain, and is contained in the hollow canal running through the vertebrae of the spine. From it thirty-one pairs of nerves originate. The nerves which run to the arm are collected in a network called the brachial plexus. In the same way the great nerves to the leg come together in the lumbar plexus.

The sympathetic nervous system consists of a main nerve trunk running downwards along the spine from the skull to the coccyx. This sympathetic system communicates indirectly with the brain and spinal cord, and also with all the great arteries and other important structures in the abdomen.

**APPETITE** is the natural craving for food which automatically arises when the system is in need of nourishment. Without it normal digestion does not take place.

Excessive appetite may be simply due to habit, or may be a symptom of acid dyspepsia or of diabetes. Loss of appetite occurs in any fever or general weakness, because the stomach and the digestive glands early feel the weakening effect of any physical upset. In certain forms of dyspepsia, in catarrh and cancer of the stomach, and in tuberculosis, loss of appetite is a common early symptom. In nervous breakdown, too, all the other symptoms are frequently made worse by the patient's disinclination to food of all kinds.

Unless there is a specific disease causing the symptom, a course of some bitter tonic, with regular outdoor exercise, plenty of sleep, and a temporary change of surroundings, will usually cure the condition. (*See APPETISERS.*) Excessive appetite is sometimes a symptom of chronic indigestion or of diabetes. (*Boulimia.*)

**APPETISERS.**—The appetite may be lost from a great variety of causes, such as grief, anxiety, and all depressing emotions, a too sedentary life, improper food producing indigestion, too much tea, coffee, tobacco, or alcohol, irregular meals, and the use of opium and other narcotic drugs. In each case the doctor must prescribe appropriate treatment. The cause should be removed, and drugs which promote appetite administered. These consist of the "bitters" and other drugs such as arsenic, hydrochloric, and sulphuric acids, etc. Vegetable bitters in common use are calumba, gentian, quassia, cascarilla, chiretta, cusparia, serpentary, dandelion-root, and bitter orange-peel.

They are prescribed as infusions, extracts, and tinctures.

These stimulate the nerves of taste, and thus sharpen the appetite. They also increase the flow of digestive juices in the stomach and produce a feeling of hunger. If used for too long a period they may give rise to catarrh of the stomach and dyspepsia.

The doses of calumba, cascarilla, chiretta, gentian, quassia, and serpentaria are:

Infusion	..	..	..	..	..	..	$\frac{1}{2}$ to 1 ounce
Tincture	..	..	..	..	..	..	$\frac{1}{2}$ to 1 drachm

The dose of the infusion of cusparia is 1 to 2 ounces.

Of dried orange peel, infusion	..	..	..	1 to 2 ounces
Of fresh orange peel, tincture	..	..	..	$\frac{1}{2}$ to 1 drachm

Quinine also increases the appetite by stimulating the secretion of the mouth and stomach, the dose for this purpose being  $\frac{1}{2}$  to 2 grains of the sulphate or hydrochloride of quinine.

Hydrochloric, nitro-hydrochloric, and sulphuric acids help to restore the appetite in certain conditions of the stomach. The dose of the three is from 5 to 20 minims of the dilute acid.

Nux vomica, by its action of increasing the peristaltic movements of stomach and intestines, promotes appetite in weak conditions of the digestion.

The dose is 1 to 3 minims of the liquid extract, 5 to 15 minims of the tincture.

Arsenic in small doses dilates the blood-vessels of the stomach and increases the flow of digestive juices. The dose for this purpose is 3 to 4 minims of the liquor arsenicalis, thrice daily, after meals. It should be remembered that sometimes old people bear this remedy badly.

The following is an excellent example of an appetiser :

R

Compound tincture of cardamoms .. .. .	1½ drachms
Concentrated compound solution of sarsaparilla .	1 drachm
Spirit of chloroform .. .. .	1½ drachms
Tincture of calumba .. .. .	4 "
Water .. .. .	.. enough to make 6 ounces

Take half a small wineglassful ten minutes before dinner as an appetiser.

Where a slightly run-down state of the health is responsible for the poor appetite, a more active tonic such as the following is indicated.

R

Iron and quinine citrate .. .. .	1½ drachms
Tincture of nux vomica .. .. .	1 drachm
Tincture of orange .. .. .	1 "
Chloroform water .. .. .	.. enough to make 8 ounces

Mix well. Take two tablespoonsful half an hour before meals three times a day.

A tonic effervescing mixture which often has a stimulating effect on a jaded appetite is the following :

R

#### MIXTURE I.

Citric acid .. .. .	½ ounce
Quinine sulphate .. .. .	36 grains
Chloroform water .. .. .	.. enough to make 12 ounces

#### MIXTURE II.

Ammonium carbonate .. .. .	½ ounce
Orange syrup .. .. .	1 ounce
Chloroform water .. .. .	.. enough to make 12 ounces

Add two tablespoonsful of mixture No. I. to two tablespoonsful of mixture No. II., and take during effervescence. Take three times a day after meals.

**APYREXIA** means the absence of fever. The term is used in relation to malaria and other diseases when the fever disappears for a time and the temperature becomes normal.

**ARACHNOID MEMBRANE.** The middle one of the three membranes which cover the brain and the spinal cord.

**ARCUS SENILIS.** In old people, particularly those whose blood-vessels have undergone degenerative changes, there is frequently to be seen a milky coloured line about the outer edge of the iris, the coloured part of the eye. This is known as the arcus senilis. Its presence does not necessarily mean that any serious disease is threatening; it may simply be one of the changes of age.



**AREOLA** is the name given to the purplish red ring immediately surrounding the nipple. A widening and a deepening of the colour and extent of the areola of the breast is an early sign of pregnancy.

**ARGYRIA** is the description applied to the dark colouration of the skin sometimes produced when the use of nitrate of silver has been continued for a long time. Nothing can be done to remove it.

**ARGYROL** is an organic compound of silver which is largely employed in medicine as a powerful antiseptic which has no irritating or poisonous effects on the healthy tissues to which it is applied.

In ophthalmia neonatorum or purulent conjunctivitis of new-born infants five per cent. argyrol solution is sometimes used as an antiseptic eye-wash.

A few drops of a 5 to 10 per cent. solution of argyrol dropped into each of the eyes of the infant immediately after birth form an effective preventive treatment against this form of ophthalmia.

**ARMPIT.** The armpit, or axilla, contains the large axillary vessels and nerves which supply the arm. A wound here is therefore dangerous. It also contains a number of lymphatic glands which may become swollen and inflamed from a poisoned wound in the arm. In cancer of the breast the axillary glands usually become implicated, and may be felt as hard lumps, which have to be excised when the cancerous breast is removed.

### ARMPITS PERSPIRING.

When perspiration is excessive, wash the armpits daily with cold water, using a good tar soap. Dry thoroughly, then dust with a little powder consisting of boric acid and starch in equal parts.

A more elegant powder than the above is prescribed below. This will tend to dry the excessive secretion, and leaves behind a pleasant odour.

R

Oil of rose geranium .. .. .	6 minims
Salicylic acid .. .. .	1 drachm
Zinc oleate powder .. .. .	3 ounces
Powdered starch .. .. .	3 "

Mix thoroughly. Dust powder on several times a day after washing the parts and drying thoroughly.

Sometimes the following lotion, applied morning and evening after the

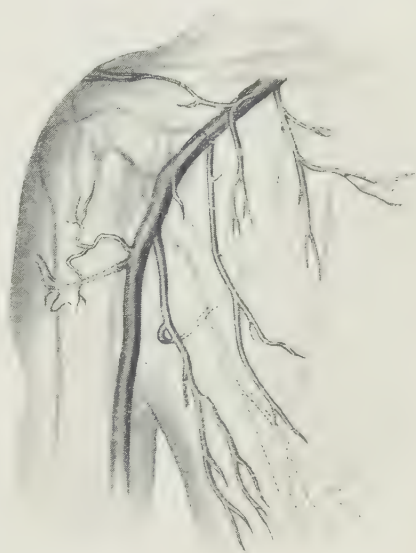


DIAGRAM OF THE VESSELS OF THE ARMPIT

Here are the axillary artery and vein with their branches, the brachial nerves and a large number of lymphatic glands. A wound here is therefore dangerous.

armpits have been sponged for three or four minutes with very hot water, has the effect of reducing the excessive action of the skin glands :

R

Essence of bergamot	..	..	..	..	1 drachm
Glycerine	..	..	..	..	6 drachms
Tincture of perchloride of iron	..	..	..	enough to make	4 ounces

Apply with sponge as directed, after bathing the parts in very hot water.

**ARNICA.** The tincture of arnica is a common home application for sprains or bruises, acting as a counter irritant and bringing a plentiful supply of healing blood to the part. If painted on too frequently, arnica may raise painful blisters. It should never be used internally.

**AROMATICS** are vegetable drugs which have a characteristic smell or aroma, sometimes used in medicine to relieve flatulence and help digestion. They also nearly all have valuable antiseptic qualities. They include allspice, anise, camphor, capsicum, caraway-seeds, cardamoms, chamomile, cinnamon, cloves, coriander, dill, fennel, ginger, mace, mustard, nutmeg, peppermint, phenol, pimento, turpentine, thymol.

Aromatics as a class dilate the vessels of the stomach, increase the gastric secretions, and so promote appetite and digestion.

**ARRHYTHMIA** means irregular beating of the heart, which may be due to digestive disorders, poisons in the blood such as the nicotine of tobacco, etc., profound emotion, and other causes, including diseases of the heart itself. In most cases it is not a dangerous condition.

**ARROWROOT**, or cornflour, a starchy powder, derived from the root of a tropical plant, useful as a readily digested food for invalids. Besides being easy to digest, arrowroot is very completely absorbed in the intestine, and so is made much use of in cases where the digestive tract is irritable and diseased, requiring that a minimum of work should be thrown upon it. Because it is made up almost entirely of starch, arrowroot should not be given to patients who have difficulty in digesting sweet or starchy foods.

Arrowroot may be prepared either with milk or water. Whichever fluid is used, the powder should first be made into a smooth paste by mixing with it a little cold water. Then the rest of the fluid (water or milk) should be added, and the mixture well stirred. It should then be boiled for ten or fifteen minutes, until it thickens. Depending on how thick the gruel is preferred, one half to one pint of cold water or milk should be used to four teaspoonful of the powdered arrowroot.

When the gruel has thickened it may be seasoned by adding a little sugar or a teaspoonful of brandy.

**ARSENIC.** A powerful mineral poison often used in minute doses in certain blood diseases, skin ailments, etc. It, of course, can only be used on a physician's prescription.

Arsenic is a common ingredient in digestive tonics, as in small doses it has

a stimulating effect on the stomach. It is the most useful drug known in the treatment of pernicious anæmia. Salvarsan, or "606," the specific in syphilis invented by Prof. Ehrlich, is an arsenic compound. The doses of the most commonly used preparations are :

Fowler's solution (liquor arsenicalis) . . . . .	2 to 8 minims
Donovan's solution (liquor arsenii et hydrarg. iodidi) . . . . .	5 to 20 "
Arsenious acid . . . . .	1-60th to 1-15th grain

**ARSENIC POISONING, Acute.** Vomiting, continuous diarrhœa, abdominal pain, and great weakness are the chief symptoms where an overdose of arsenic has been taken. Give the patient a number of emetics of warm mustard and water (a teaspoonful of mustard to a half pint of water), so that the stomach may be thoroughly emptied by the time the physician arrives.

The antidotes for arsenic are iron and washing soda. Two table-spoonsful of tincture of the perchloride of iron should be mixed in a glass with four



THE ARROWROOT PLANT AND ITS ROOT

Hinkins

tablespoonsful of water. In a separate tumbler mix a tablespoonful of ordinary washing soda in a wineglass of water. Empty both mixtures into a large glass, and stir thoroughly, then give the patient every three minutes a table-spoonful of the mixture. Half an hour later give him the whites of two eggs beaten up in a glass of equal parts of milk and water. The patient should be kept warm in blankets, with a hot water-bottle at the feet. Nothing but milk should be allowed for the first week after recovery.

**Chronic Arsenic Poisoning.** Workers in paints, dyers, and paper-hangers sometimes absorb (through the skin or by the breath) sufficient small doses of arsenic from the coloured materials they work with, to cause symptoms of chronic poisoning. These are nausea, vomiting, headache, tremulousness of the fingers, redness of the eyes, skin eruptions, and gradual loss of muscular

power. The only treatment of any avail is to remove the patient from all possible contact with arsenic, and to build up his general health by some tonic, such as Easton's syrup,  $\frac{1}{2}$  to 1 teaspoonful in a little water three times a day after meals, while Nature expels the absorbed arsenic from the system. If the digestion has been greatly upset a very light diet, consisting chiefly of milk, milk puddings, custards, etc., is necessary for the first. Five grains of potassium iodide in a half glass of water taken three times a day after meals, aids the system in getting rid of the poison. The patient should lead a quiet life until completely recovered.

Cases have been recorded in which the above symptoms were brought on simply by living in a room the wall-papers of which had been coloured with green or yellow arsenic dyes. As the danger of arsenic poisoning is well known, makers of wall-papers, as a rule, are scrupulously careful to avoid all arsenic dyes.

**ARTERIES** are the vessels which convey the blood from the heart to the various regions and parts of the body.

The arteries, with the exception of the pulmonary arteries, carry bright red blood which has just been recharged with oxygen in the lungs. The pulmonary arteries and the veins carry the purplish impure blood which has been deprived of its oxygen in its passage through the tissues, and is now on its way back to the lungs for purification and re-oxygenation.

Unlike the veins, which are very thin walled and tear easily, the arteries have three distinct coats made up of muscle and elastic fibres, so that when cut across they keep their shape instead of collapsing like the veins. The presence of the elastic fibres allows the arteries to dilate as each heart-beat forces the blood into them. The elasticity or resiliency of the vessel-walls helps to push on the blood to the parts farthest from the main pump—the heart.

The main artery leading out from the left ventricle of the heart, the aorta, is the largest artery in the body. From this branches are given off which, branching themselves in turn, end up in the tiny capillaries, or end arteries, which are distributed throughout all the tissues of the body.

The chief diseases of the arteries are aneurism, atheroma, and arterio sclerosis. (See under these headings.)

The chief artery of the body is the aorta which leads off from the left ventricle of the heart. Running first towards the right, it comes nearest to the surface just behind the junction of the second right rib with the breast bone. Then curving backwards to the left, it dips down behind the left lung close to the backbone and enters the abdomen through an opening in the diaphragm. A little below the level of the navel it divides into the two iliac arteries which supply the lower limbs. Early in its course it gives off the main arteries which supply the head and arms.



**ARTERIO SCLEROSIS** is a diseased condition characterised by a loss of elasticity and hardening of the walls of the arteries.

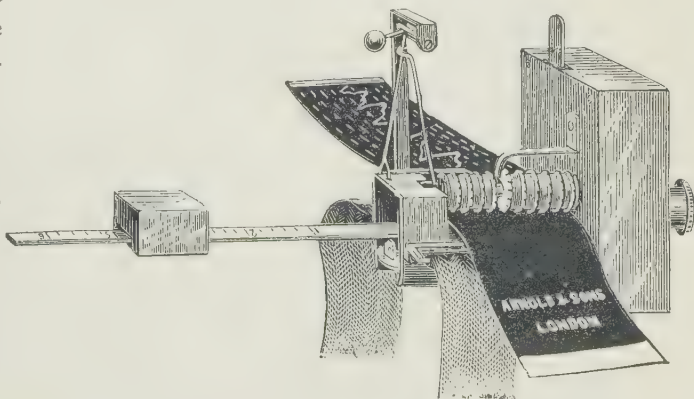
A degree of arterio sclerosis is natural in old age, as the vessels begin to wear out through prolonged use. Whether or not one escapes arterio sclerosis depends largely on the material of which one's vessels are made and the degree of use or abuse one gives them. That a poor quality of blood vessel can be inherited is strongly suggested by the fact that cases of advanced arterio sclerosis are sometimes found in men under thirty who, for no apparent cause, may have the worn and aged arteries of a man of sixty.

Again, several members of a family may show a decided tendency to early arterio sclerosis, showing that, as Sir William Osler puts it, "in the make-up of the machine bad material was used for the tubing."

Much more commonly, however, the disease follows on originally sound and normal vessels being subjected to an abnormal amount of wear and tear which leads to their premature wearing out. The condition is not uncommonly found in strongly built middle-aged men. (Mott.) The patients are frequently anæmic, thin, and pale, or they may be of the flabby, stout type. A not uncommon symptom is a pronounced arcus senilis (see page 130).

Because over-eating very commonly is followed by a higher blood pressure, and high blood pressure is the cause of many cases of arterio sclerosis, over-eating may be ranked as one of the main sources of arterio sclerosis. The immediate results of constantly eating more than one actually needs may not be apparent up to middle-age, but then they are apt to begin to show themselves in a premature rise of blood pressure, followed sooner or later by ageing and hardening of the arteries. This is one mode of causation of arterio sclerosis; but, on the other hand, at least half the cases have no high blood pressure, and are not due to over-eating nor to over-exertion. Sometimes the disease is found in old maids who are very light eaters and live the most quiet lives.

Any chronic poisonings of the blood, such as result in gout, syphilis, lead poisoning, or chronic alcoholism, are likely to bring on arterio sclerosis. Another common cause is prolonged and heavy physical work or exercise. This most

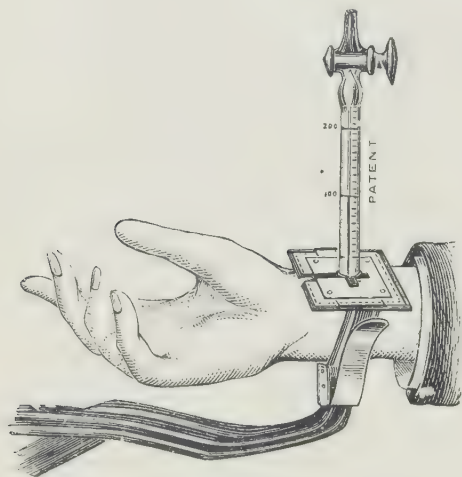


THE SPHYMOGRAPH, AN APPARATUS FOR RECORDING VARIATIONS IN BLOOD PRESSURE

probably acts by increasing the blood pressure within the arteries, and so causing unnatural wear and tear. Kidney disease, because it frequently leads to a constantly higher blood pressure, is another common cause.

**Symptoms.** The patient himself may complain of no symptoms at all, the condition of arterio sclerosis being discovered only when the physician has been consulted for some other, perhaps trifling, ailment.

In other cases the patient may have noted in himself a general lack of fitness for months past. He may also complain of headaches in increasing frequency, defective memory, cold hands and feet, and an occasional or constant dull aching pain over the heart region. Again, if the vessels in the legs are markedly affected he may complain of tickling or painful sensations in the limbs, pain in the calves, soles of the feet, or about the nails. In some cases, after a few minutes' walking, the patient is forced to stop on account of sensations varying from painful feebleness to definite cramp in the legs. (Mott.)



TESTING BLOOD PRESSURE IN ARTERIO SCLEROSIS BY THE SPHYGMOMETER

A hardness and thickening of the arteries, so that they feel more or less like hard cords under the skin, is one of the earliest signs the physician may note. Slight pressure with the fingers on the artery at the wrist will normally obliterate the pulse. In arterio sclerosis, with high blood pressure, because the vessel-wall is more or less hard and stiffened while the pressure of the blood within it is raised, the pulse can only be obliterated by moderate pressure with difficulty or not at all.

Where there is a rise of the general blood pressure in arterio sclerosis, the heart has to work harder driving the blood through the inelastic hardened vessels, and gradually increases in size. This increase the examining physician can sometimes determine with his stethoscope or by percussion.

The apex beat—that is the position on the chest where the heart-beat is felt (or in thin people seen) most noticeably—normally is about an inch or half an inch inside the nipple. When the heart is enlarged in high pressure, the apex beat may be displaced as much as an inch *outside* the nipple line.

**Prognosis.** The outlook of the patient suffering from arterio sclerosis depends in the first place on the care he takes of himself, and in the second place on what special areas of his arterial system are chiefly affected.

For example, if the arteries which supply the heart with blood become seriously involved, the outlook is always grave. Sudden death from clotting in these vessels or from bursting of the vessel wall may occur in rare cases. Arterio sclerosis of the coronary vessels of the heart is one of the common causes of death in angina pectoris.

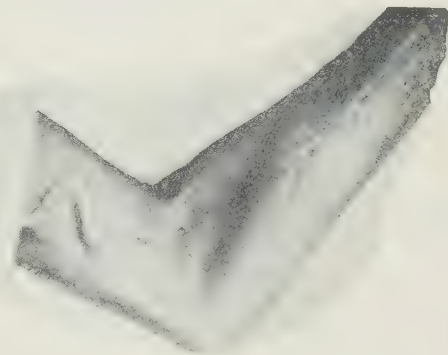
In other cases the symptoms may resemble those of advanced valvular heart disease.

When the vessels of the brain are chiefly affected loss of speech and paralyses of various types may result. The patient may constantly suffer from giddiness or attacks resembling epilepsy. Sudden death may occur from the blocking of an important brain vessel, or from the rupture of the same. (See APOPLEXY.)

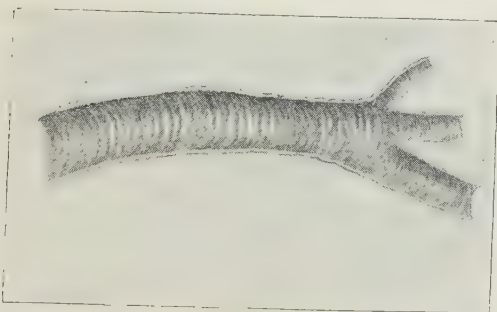
**Treatment.** Everything possible should be done to reduce the work of the heart, to lower any abnormally high pressure of the arteries, and to prevent any unnecessary wear and tear falling on them.

In the first place, then, the patient should cut down his diet, in particular avoiding heavy meat meals and all indigestible articles. Alcoholic stimulants should be given up entirely. Chicken, veal, if it can be got tender, sweetbreads, brains, sole, and other white fish may be eaten in moderation, preferably boiled. Rich meaty gravies and sauces should be avoided. The patient should live largely on farinaceous foods, thoroughly cooked vegetables, milk dishes, and cereals. He may drink plenty of water between meals (unless he is of the very full-blooded type, when the amount should be somewhat restricted), but tea and coffee should be taken in the strictest moderation. Above all things, the total amount of food taken should be appreciably diminished.

The patient, without getting hipped about himself, should realise that from now onwards to the end of his life he should look upon himself as in anything but robust health. This does not mean that he is certain to die in two or three years. It does mean, however, that



SWELLING OF THE BRACHIAL ARTERY IN ARTERIO SCLEROSIS



THE CHALKY DEGENERATION OF AN ARTERY IN ARTERIO SCLEROSIS

if he does not radically reform his whole way of living, he will be an old man by sixty, if he lives so long.

All excitement tends to raise the blood pressure which, in at least half the cases, is already abnormally high in arterio sclerosis. The first thing, then, is to settle down to a quiet, well-regulated life. Exciting pursuits such as the Stock Exchange, horse racing, gambling in general, or hunting ought to be given up entirely. Games such as golf or croquet, or a moderate amount of not too strenuous lawn tennis may be indulged in, for moderate outdoor exercise is advisable, though any prolonged muscular exertion which may seriously fatigue the patient must be rigorously avoided.

To keep the skin in active condition a warm bath should be taken daily, but great care should be taken to prevent chilling after the bath.

If possible the patient should live in a warm, equable climate. Dampness and sea-fogs should be avoided.

In the earlier stages of the disease a six weeks' stay at some spa, such as Bath or Aix-les-Bains, is often of service. Not only do the baths seem to have a curative effect, but the strict routine, the freedom from home cares, the special diet, and the regular hours of rest seem to do good.

**Drug Treatment.** Iodide of potassium, five to ten grains three times a day, in a wineglass full of water often seems to reduce blood pressure, and so is frequently prescribed in arterio sclerosis, if the artery pressure is raised.

If syphilis is suspected of being the cause of the arterial degeneration, much larger doses of potassium iodide (fifteen to thirty grains) may be given three times a day for a month or six weeks at a time. Should signs of iodism appear, *i.e.*, running at the nose and eyes, skin eruptions, headache, and loss of appetite, the drug should be omitted for a week and then be started again, giving a smaller dose.

It is of the utmost importance that the bowels be opened freely once every day. For this purpose calomel, one or two grains, may be taken several nights a week if necessary, followed next morning by two teaspoonsful of sodium sulphate in half a glass of water.

Since the high pressure in the arteries, so common in the early stages, is to a certain extent due to an abnormal contraction of the blood-vessels, relief can often be obtained by the use of drugs which dilate the arteries. The following prescription is useful here. (Calwell.)

R

Potassium nitrate	..	..	..	..	..	2 drachms
Sodium nitrite	..	..	..	..	..	3 grains
Potassium bicarbonate	..	..	..	..	..	2 drachms
Water	..	..	..	..	..	6 ounces

Make into a mixture. Take two tablespoonsful in a large tumblerful of water every morning.

If this mixture proves by the sphygmometer to reduce the blood pressure in the arteries, its use may be continued indefinitely as long as it continues effective.



In the latter stages serious complications due to heart failure may arise. Kidney troubles and paralysis may also develop. All these symptoms and complications must be treated by the physician as they arise. A remedy which if used with discretion by the physician is often very efficacious in cases where there is a sudden rise in blood pressure, is bleeding.

**Preventive Treatment.** After the age of forty the man who is thoughtful of his arteries, and intends to reach a ripe, old age, will do well to begin to cut down his heavy meat meals, make a point of chewing everything thoroughly, will be very moderate with all alcoholic beverages, eschew rich dishes of all kinds, be very sparing of tea and coffee, and avoid all unnecessary worry, nervous and physical strain, and mental excitement. If he maps out his life along these lines, taking moderate outdoor exercise every day, a half-hour's complete rest after each meal, and a full eight hours' sleep every night, he need have little fear of arterio sclerosis, the disease which more than any other brings about premature old age.

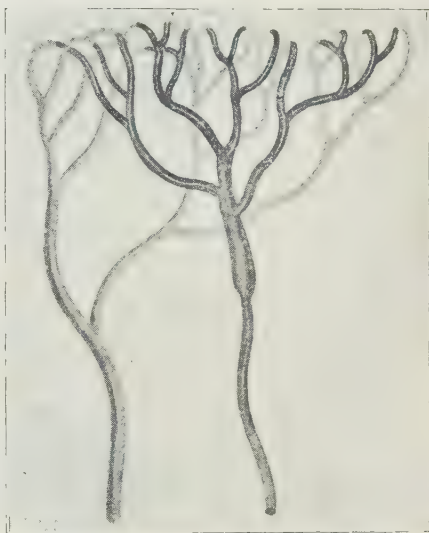
**ARTERIOLES** are the smallest divisions of the arteries which finally branch into the capillaries.

**ARTHRITIS** means inflammation of a joint.

**ARTIFICIAL RESPIRATION.** A method of restoring breathing in cases of drowning, gas-poisoning, etc., by alternately expanding and contracting the patient's chest, so that air is drawn into the lungs.

The most useful methods are (1) Prof. Schäfer's, (2) Dr. Sylvester's, and (3) the "Mouth to Mouth" method of inflating the lungs.

**Prof. Schäfer's Method.** The subject should be placed face downward on the ground. The operator kneels astride the prone body, facing the head, his knees, one on each side, being about the level of the unconscious man's hips. He then places his hands, one on each side of the patient, over the lowest ribs. Now gradually leaning forward and downward he presses the base of the ribs upwards and inwards. The result of this movement is that any water in the lung tubes is pushed out through the nose and mouth. At the end of the movement, which should be carried out slowly and with no violence, the rescuer then slowly comes back into an upright position, taking all pressure off the ribs, but still leaving his hands flat against the patient's side.



THE ARTERIOLES IN DIAGRAM

The whole double movement, the slow pressure forward and the equally slow withdrawal of pressure, should take about four or five seconds, and should be continued rhythmically until the patient shows signs of recovering consciousness. Apparently drowned men have been saved by this method after long periods of total unconsciousness, so that the movement should be continued for at least half an hour. Meantime, if a second person is present, he should busy himself briskly rubbing the unconscious man's feet and hands and arms and legs.

**Dr. Sylvester's Method.** Here the patient lies flat on his back, with a folded coat or some other garment under his shoulders to keep his head a trifle higher than his feet. All clothing about the chest and abdomen should be gently but quickly loosened or torn open. When the neck and chest are free, the patient is swiftly rolled over on to his face, and then the operator gives him several sharp blows between the shoulder-blades to force out any water which may be clogging up the entrance to the windpipe. Turning him swiftly over on to his back again, the operator pulls the patient's tongue forward to clear the air passages, and then starts on the artificial breathing movements. As these may be rendered perfectly useless at any moment by the



POSITION 1. PRESSURE ON THE BASE OF THE RIBS



POSITION 2. WITHDRAWAL OF PRESSURE  
PROFESSOR SCHÄFER'S METHOD OF ARTIFICIAL RESPIRATION  
Blocks by courtesy of the Royal Life Saving Society.



POSITION 1. INSPIRATION



POSITION 2. EXPIRATION

DR. SYLVESTER'S METHOD OF ARTIFICIAL RESPIRATION

By courtesy of the Royal Humane Society.

tongue falling again into the back of the throat, a helper, if one is at hand, should hold the tip of the tongue between the finger and thumb of his right hand covered with a handkerchief (to prevent it slipping), and with his left he should pull the jaw forward. Meantime the operator, kneeling at the patient's head, leans forward over his face and grasps his arms below the elbow. These he then draws upwards and outwards, until they are well over the patient's head, practically in the position a man assumes when stretching his arms in the act of yawning. After holding the arms in this position long enough to count five, the operator leans forward again over the patient's face, bending the arms as he does so, and pressing the patient's elbows and arms against the side of the chest. In this way the chest is expanded and contracted in a manner closely resembling the movements carried out in normal breathing.

As in Professor Schäfer's method, the whole upward and downward movement of the arms should take four or five seconds to complete, from twelve to fifteen double movements being carried out to the minute. If a second assistant (other than the one still grasping the tongue) is at hand, he may busy himself briskly rubbing the patient's bared feet and legs. This method also should be persevered in for at least half an hour, even though there may be no signs of life to encourage the operator.

When the patient begins to breathe by himself, even though feebly, as a result of either of these methods, it may at once be discontinued, and the operator should now turn his whole attention to stimulating the flagging circulation.

As soon as possible, in a drowning case, the patient's wet garments should be removed, and he should be wrapped in warm, flannel blankets, and hot-water bottles or bricks warmed in the fire should be placed in the armpits and against the soles of the feet. The arms and legs should be vigorously rubbed always in the direction *towards* the body, to force the stagnant blood in the veins back to the heart. In this way the labouring heart can be materially assisted in its efforts to propel the warm, arterial blood from the deeper parts of the body to the chilled surfaces.

When the patient is sufficiently recovered to swallow, small amounts of heart stimulants, such as a teaspoonful of neat brandy, or a teaspoonful of aromatic spirits of ammonia in a small wineglass of water may be given. If neither of these are handy, a small cupful of very hot, very strong, black coffee may be given, and repeated in a quarter of an hour.

To avoid all danger of succeeding heart failure, the patient should be kept flat in bed for at least twenty-four hours after his return to consciousness.

Professor Schäfer's method has now been adopted by the Royal Life Saving Society and the London Police Force, in preference to earlier methods, on account of its simplicity, and because it can be adequately carried out by one person without an assistant. The patient lying face downward, there is less possibility of the tongue falling into the back of the throat and blocking the entrance to the air passages.

Where there are plenty of assistants at hand, the best results are probably obtained from a combination of the two, the Sylvester method being used as an alternative to the Schäfer method, should the face become purple and the neck veins greatly swollen from congested venous blood.

In young children the "Mouth to Mouth" method of inflating the lungs sometimes is strikingly successful. The operator here kneels down by the unconscious child's side, and with his hand pressing over the stomach (to prevent that organ from being inflated), he tries to blow air into the patient's lungs by placing his lips over the child's mouth and expelling his breath exactly



as in blowing smoke out of the lungs in smoking. A handkerchief should be placed over the patient's mouth, and the nostrils should be held closed.

After forcibly emptying his own lungs in this way the operator should remove his hand from the patient's abdomen, release his grasp on the nostrils, and by gently pressing the lower ribs upwards and inwards (as in Schäfer's method) he should try to expel from the lungs the air he has just breathed into them. This double process should be repeated at the rate of fifteen to eighteen times per minute.

**Artificial Respiration in New-born Infants.** Sometimes instead of gasping or crying vigorously (and so speedily filling its lungs with air), the new-born infant makes no apparent effort to breathe, and in a moment or so after birth may be in great danger of death from suffocation.

The nurse or attendant should first pass her forefinger over the back of the throat and mouth, so as to sweep out any mucus or secretion blocking up the windpipe. This done, the child should be plunged for a moment into a basin of cold water, and then into one of hot water, the process being repeated several times.

If the child is simply a little bluish in the face a few smart smacks with the fingers on the bare back or chest will usually be enough to cause it to begin to cry, after which there is no further danger of suffocation.

Sometimes after prolonged labour or from other causes the child, instead of being blue or purplish in the face, is as white as chalk and perfectly flaccid. These cases of "white suffocation" are much more dangerous than the blue type, and no time should be lost in beginning "mouth to mouth" inflation of the lungs. If within two or three minutes this does not have the required effect, a change may be made to the Sylvester method.

Alternating between the two methods, artificial respiration should be unceasingly kept up for at least half an hour, since sometimes, even after this period, an apparently asphyxiated infant may begin to breathe.

**ASAFOETIDA** is a resin of extremely nasty odour occasionally prescribed for its stimulating action on the muscular coat of the intestine. It is sometimes used as a remedy for flatulence. Combined with purgatives it aids their action.

Because of its nasty taste and odour, asafoetida is sometimes given to hysterical patients in the hope that they will control themselves rather than take the evil-tasting medicine. For flatulence in the lower intestine an enema of asafoetida is sometimes given with advantage. The doses of the drug and its preparations are as follows :

Asafoetida (resin) by the mouth	.. .. .	5 to 15 grains
Asafoetida (resin) as an enema	30 grains rubbed up in 4 ounces of water	
Tincture of asafoetida	.. .. .	$\frac{1}{2}$ to 1 drachm
Spiritus ammoniæ foetidus	.. 20 to 40 minims, if several doses are given ; 60 to 90 minims if only 1 dose	
Pill of aloes and asafoetida	.. .. .	4 to 8 grains

**ASCARIS LUMBRICOIDES.** The round worm, one of the four thread-worms which sometimes inhabit the human intestine. The worm varies in length from six or eight to fifteen inches. Generally, only a few are present, but sometimes there are several dozens. Children are the principal sufferers.

As a rule there are no definite symptoms, but in nervous children the irritation may set up muscular twitchings and convulsions.

**Treatment.** For twenty-four hours let the diet consist only of fluids. Then at bedtime give a dose of santonin. Next morning, before breakfast, give a purge of castor oil, or jalap, or calomel. Repeat this treatment three times at intervals of four or five days. Of these three the best to give a child is castor oil.

The doses of the medicines named above are:

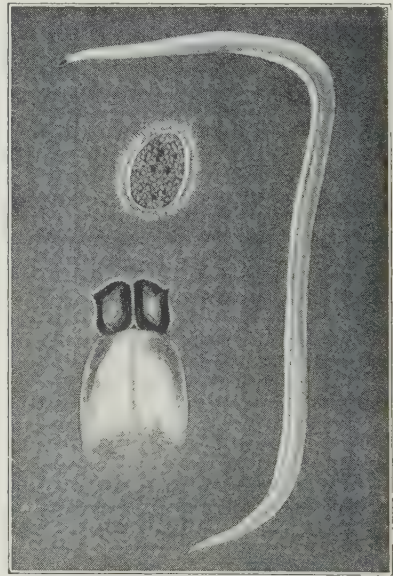
Santonin, for a child 1 year	..	..	$\frac{1}{2}$ grain
"	"	2 years	1 to 2 grains
"	"	5 "	3 grains
"	"	" an adult	4 to 5 grains
Castor oil, for an infant or child	$\frac{1}{2}$	to 1	teaspoonful
"	"	for an adult	1 to 2 tablespoonsful
Compound jalap powder, for an adult,	20	to	40 grains
Calomel	..	..	2 to 4 grains

**ASCITES** means abdominal dropsy in which fluid collects in the peritoneal sac. It may be due to heart or kidney disease, or to any of a large number of local causes such as obstruction of the portal vein by a tumour, or a blood clot, obstruction of the hepatic veins, or peritonitis.

It should be clearly understood that ascites is always a sign of some disease which must be diagnosed and treated, and is not a disease itself.

The treatment depends entirely on the cause. In heart disease the physician will often prescribe digitalis, strophanthus, or broom, to encourage the heart better to carry on the circulation. The following prescription may be suitable where a chronically diseased heart having temporarily failed to keep up to its work, fluid has escaped through the walls of the vessels and collected in the abdominal cavity:

R	Acid potassium tartrate	..	..	..	..	1 ounce
	Tincture of digitalis	..	..	..	..	2 drachms
	Spirit of nitrous ether	..	..	..	..	6 drachms
	Water	..	..	..	enough to make	12 ounces
	Make into a mixture. Take two tablespoonsful every four hours for four doses.					



THE ROUND WORM ASCARIS LUMBRICOIDES

A parasite of the human intestine.

A good broom mixture which is sometimes useful is the following :

℞	Acetate of potash	..	..	..	..	1 drachm
	Spirit of nitrous ether	..	..	..	..	2 drachms
	Infusion of broom	..	..	..	..	4 ounces

Make into a mixture Take two tablespoonsful at four-hour intervals for four doses.

The kidneys may also be pressed into service, to help in carrying off the excess of fluid in the abdominal cavity. The following mercury pill may be helpful here :

℞	Mercury pill	..	..	..	..	12 grains
	Powdered squill	..	..	..	..	12
	Powdered digitalis leaf	..	..	..	..	12
	Green extract of hyoscyamus	..	..	..	..	12

Mix and make into twelve pills. Take one pill three times a day.



ABDOMINAL DROPSY (ASCITES)

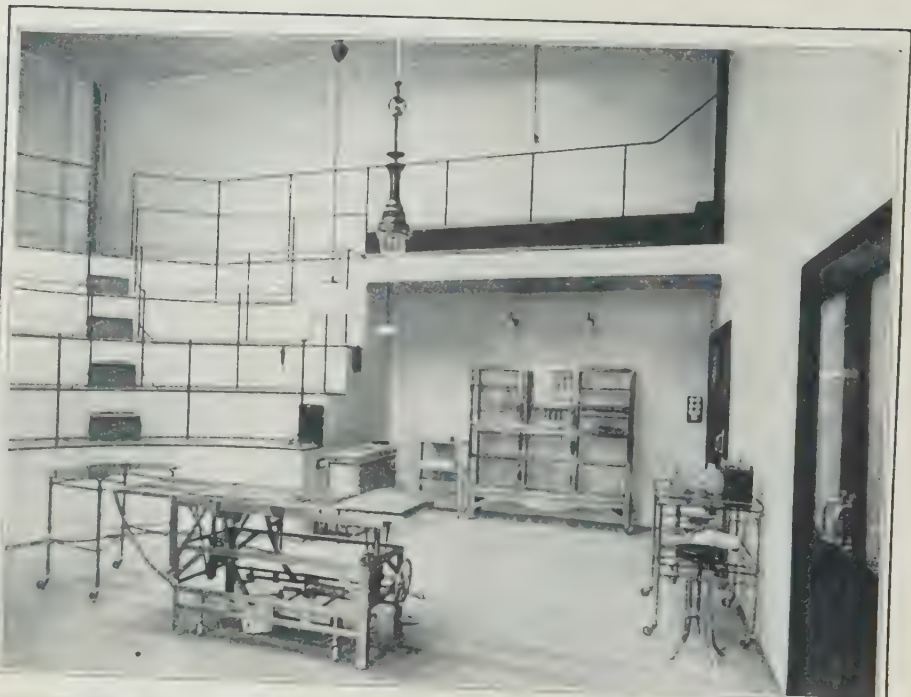
The above mercury pill may also be useful where the ascites is due to chronic liver complaints.

When the distention of the abdomen is great and refuses to pass off under the action of drugs as above, the physician may have recourse to "tapping," an operation which consists of drawing off the greater portion of the accumulated fluid through a large hollow needle passed through the abdominal wall.

**ASEPSIS.** This term is applied to the method of treating wounds with sterilised dressings instead of with antiseptics such as carbolic acid, perchloride of mercury, etc.

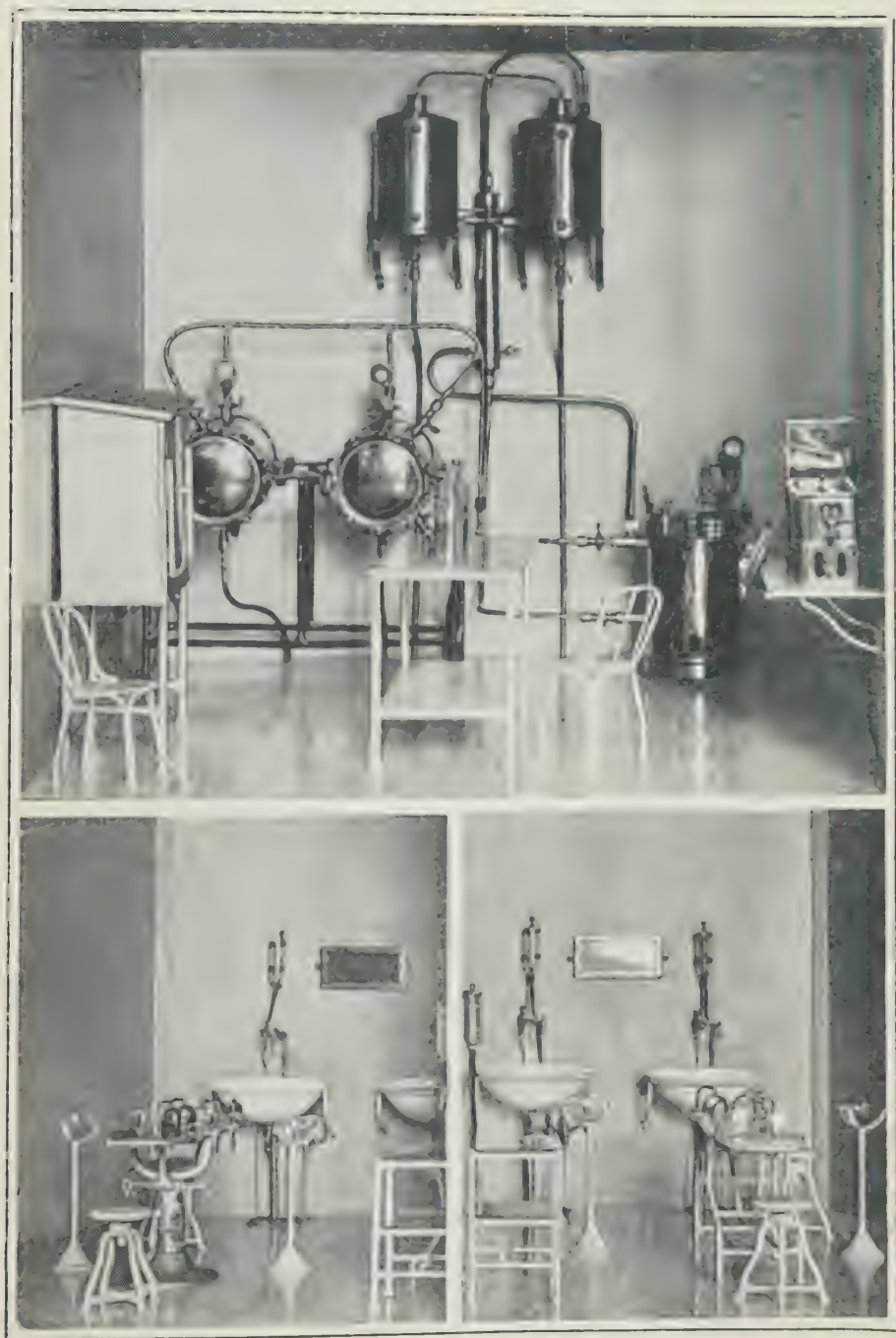
All the dressings, bandages, etc., are made sterile by means of steam under high pressure, and the wounds are washed with plain sterilised water instead of with antiseptic lotions. It is found that healing takes place more rapidly under this than under the antiseptic method. It cannot always be employed, however, for the absolute cleanliness necessary can only be secured in the best regulated hospitals

**ASPIRIN,** or salacetic acid. This drug is not dissolved until it reaches the intestine, and therefore does not irritate the stomach so much as other salicylates. It often relieves the pain of headache, neuralgia, sciatica, neuritis and chronic rheumatism. In some cases it promotes sleep.



ASEPSIS IN LONDON HOSPITALS  
Operating theatres at St. Mary's and Guy's Hospitals.





ASEPSIS IN PARIS HOSPITALS

Model sterilising room (top) and operating rooms (bottom). Operating rooms differing slightly in their appointments are used for septic cases. One is shown at the bottom on the right.

An average dose for a healthy adult is ten to fifteen grains in a cachet or tablet. While perhaps one of the safest of the commonly used headache remedies or sleep-producers, aspirin should be taken with great caution by those with weak hearts, as in some individuals it seems to have a dangerously depressant effect on the heart.

**ASPHYXIA** means that condition in which aeration of the blood has ceased or almost ceased owing to interference with the heart beat or with respiration. Many causes may bring it about. Among them are (1) Drowning, when water takes the place of air in the lungs; (2) Blocking of the air-passages as in strangling, hanging, or where a piece of meat or other foreign body gets into the windpipe, or where a large mass in the gullet compresses the windpipe. This condition also arises sometimes in croup, diphtheria, and a tumour in the chest. (3) Compression of the chest, as when a person is buried by falling earth, etc. (4) Inhalation of coal gas, chlorine, sulphurous acid, and other poisonous gases. (5) Disease of the respiratory centre in the brain or paralysis of the nerves or muscles of respiration, as by chloroform. Rigid contraction of the respiratory muscles from curare or strychnine poisoning may also produce asphyxia.

**Symptoms.** At first there is a feeling of great anxiety, quick pulse and violent gasping for breath. Then the head throbs, the face becomes livid, the eyes and eyelids red, the eyeballs prominent, the lips and fingers blue. The struggles for breath increase and become convulsive. Very quickly the patient becomes insensible, and unless relieved, he dies as a rule within a few minutes. Asphyxia due to coal gas and other narcotic gases usually comes on quietly, and the patient may die without a struggle.

**Treatment.** Remove the cause when practicable and promptly begin to carry out some system of artificial respiration. (*See ARTIFICIAL RESPIRATION.*) Loosen the clothing; if the clothing is wet, remove it. Cover the patient with warm blankets and place hot-water bottles to the feet. Give an enema of warm brandy and water.

**ASPIRATION.** Removal of fluid from the peritoneum, pleura, etc., by plunging a hollow needle through the abdominal or chest walls.

**ASSIMILATION.** The last act of digestion, in which the digested food is taken up and made use of by the various tissues of the body.

**ASS'S MILK.** Because it contains a much smaller percentage of indigestible proteid (casein) than cows' milk, ass's milk is sometimes useful where coarse masses of hard curd, either vomited or discoverable in the stools, prove that the infant is not digesting its cow's milk mixture. Sweeter than cow's milk, it is, however, very deficient in fats, so cream should always be added—a teaspoonful or two to each feeding bottle. Ass's milk also has a slight laxative effect which may make it (when cream is added) a valuable food for infants with a habitual tendency to slight costiveness.

**ASTHENIA** means weakness or debility.

**ASTHENOPIA** is a weak condition of the eyes, in consequence of which they become soon fatigued. It may be due to general nervous debility or slight anæmia, to reduced power of accommodating the eyes for near vision or to weakness of the external rectus muscle of the eye. Long-sighted people are liable to suffer in this way when reading or sewing.

The treatment, when the cause is nervous debility or slight anæmia, consists of tonic medicines (see under **SIMPLE BENIGN ANÆMIA**), general measures to improve the health, abstinence from reading and other near eye-work, and the use of coloured glasses. In the other cases suitable glasses prescribed by an oculist should be worn.

**ASTHMA.** Attacks of great difficulty in breathing, coming on suddenly, persisting indefinitely, and followed by equally sudden complete relief, are the chief symptoms of asthma.

The disease is due to a sudden spasmodic contraction of some of the smaller branches of the wind-pipe. Some shock to the nervous system is probably the primary cause. This nervous derangement leads to abnormal nerve impulses running down to the muscles imbedded in the walls of the bronchial tubes, causing them to contract suddenly and rendering it difficult, or almost impossible, for air to be drawn into the lungs. That over-excitability of nerves have a great deal to do with bringing on asthma is proved by the fact that great excitement or emotion often ushers in attacks in asthmatic subjects.

Sufferers from chronic bronchitis also show a particular susceptibility to asthma. Often asthma develops in the course of a bronchial attack, only to pass off when the bronchitis is cured. Sufferers from heart trouble and kidney disease sometimes develop peculiar varieties of the ailment described as "cardiac asthma" and "renal asthma" respectively. Much more common in men than in women, asthma usually develops in early adult life or middle age. Certain varieties of dust, especially the pollen of hay and other grasses, may bring on attacks of typical asthma in people susceptible to the disease. Again, the odours of certain animals may be sufficient to induce an attack. In women, disease of the womb or ovaries seems to bear some relation to asthma. When the former ailments are set right or relieved by operation or other suitable treatment, the tendency to the asthma attacks seems to pass off.

In some chronic victims of the disease, an attack depending on an individual cause appears to afford a temporary immunity against other attacks from the same cause. Thus, while exposure to dust, as in walking along a dusty road, may be sufficient to bring on a severe attack in a susceptible person, a repetition of the exposure during the next week or so may have no effect at all. In other words, the first attack has conferred at least a temporary immunity. Sometimes the victim is warned of the approach of an attack by feelings of vague discomfort, melancholy, or acute mental depression. These

symptoms may precede the attack by some hours. Oftenest the attack begins without warning during sleep. Waking suddenly with an agonised sensation that he will never again be able to draw a full breath, the patient sometimes rushes to the window in a vain struggle to draw air into his lungs. His shoulders and chest heave, his face becomes pale, and the sweat drips off his brow from the intensity of his efforts to breathe. Instead of the ordinary noiseless deep breaths, all he can manage is a continuous series of short, panting wheezes, which fail to fill the lungs.

Gradually, after some moments or even hours, he begins to succeed in drawing longer breaths. His symptoms of distress now rapidly pass off, and in a few minutes the patient is apparently as well as ever.

**Treatment.** During the attack the patient should be allowed to place himself by an open window, and to get into any position which appears to him to minimise his difficulties in breathing. A mustard emetic (a teaspoonful of mustard in a glass of warm water), by making the patient vomit, sometimes relieves the spasm of the bronchial tubes and terminates the seizure.

Numerous medicated papers and powders are sold by chemists to be burnt during asthmatic attacks, the resulting fumes having a sedative effect on the excited nerve-endings in the lung. A simple but useful fumigant of this kind can be prepared at home by soaking thick blotting-paper in a strong solution of nitrate of potash and then drying. Bend the dried paper into a cone and set light to one corner, letting the patient inhale the fumes. The "perles" of amyl nitrite, recommended for angina pectoris, broken in the handkerchief so that the fumes may be inhaled, may also give relief.

The asthmatic patient should try one after the other of the numerous fumigants on the market, until he finds the one which best suits his particular case. A favourite burning powder which may be mixed at home is as follows :

R

Powdered lobelia	..	..	..	8 parts
" potassium chlorate	..	..	2	"
" nitrate	..	..	3	"
" white sugar	..	..	3	"
" stramonium leaves	..	..	8	"

Mix well and burn a little of the resulting powder, inhaling the fumes.

Powders containing tobacco sometimes give relief, particularly in people who are not smokers.

R

Powdered strong tobacco	..	..	..	1 part
" stramonium leaves	..	..	20	parts
" potassium nitrate	..	..	10	"
" anise	..	..	10	"

Dissolve the potassium nitrate in a very little water. Mix the other three ingredients well, and then pour over them the potassium solution and allow to dry. Burn a little in a dish during attacks, inhaling the smoke.



Sometimes an antispasmodic mixture such as the following is useful in lengthening the intervals between asthmatic attacks :

R

Extract of stramonium	.. .. .	6 grains
Potassium iodide	.. .. .	1½ drachms
Compound liquorice powder	.. .. .	1½ ounces
Spirit of chloroform	.. .. .	1 drachm
Chloroform water	.. .. .	enough to make 12 ounces

Make into a mixture. Take one tablespoonful three times a day after meals.

This medicine may be taken indefinitely for three weeks out of every month, as long as it appears to lessen the frequency of the attacks.

Anyone with the least tendency to asthma should take the greatest care during the winter months to avoid all exposure likely to bring on a cold or bronchitis attack. Sometimes an abnormal growth in the nose or throat is the cause. In these cases, when the local abnormality has been removed, a tendency to further asthmatic attack may pass off.

A change of air often brings complete recovery from the disease. Patients who continuously suffer in low-lying, damp districts should try living in a high, dry location.

**ASTHMA IN CHILDREN** is not very uncommon. Usually there is a history of one of the parents, or some other near relation, suffering from the disease. Sometimes the asthmatic attacks begin in the first year ; two-thirds of the cases develop before the fifth year.

There are two chief types of asthma in children. In the first, or infantile type, which affects children between birth and five years, the predominant feature is a bronchitis accompanying or following the attacks. In the second group of cases, which generally makes its appearance between the fifth and the sixteenth year, cough and bronchitis may be present, but shortness of breath is the much more prominent characteristic (Bellingham Smith).

**Symptoms.** In the infantile variety, in a typical case, the child begins by developing what is apparently a slight cold in the chest. Suddenly in the midst of his illness he is seized with severe breathlessness. The face becomes



THE BARREL-SHAPED CHEST  
TYPICAL IN ASTHMA

greyish and livid, and the breathing is noisy and whistling. Although the difficulty in breathing may be intensely alarming to the nurse or mother, the child may go on playing with his toys as if nothing particular was the matter. This breathlessness may last from half a day to three days. In other cases of this infantile type the child, when apparently well, may be suddenly seized with shortness of breath, which, after lasting for a variable time, is followed by a severe cold in the chest.

In the type of asthma which comes on later in childhood the child, who may have been in perfect health or may have been noticed to be a little seedy, is suddenly wakened in the middle of the night by feeling that he is choking. He sits up in bed, doing his utmost to draw his breath, which he does with great difficulty. The child is frequently terrified, the fright depending on the degree of shortness of breath. After a period varying from moments to several hours the shortness of breath passes off, the little patient may cough or be sick, and in a few moments he feels practically all right again.

Despite its terrifying aspects, asthma in children is practically never fatal. There is always the danger, however, that if the attacks are frequent and severe the lungs may become permanently affected. In some cases the attacks cease before adult life is reached. In the greater proportion of cases, however, they continue throughout life.

**Treatment.** As asthma in childhood is practically confined to little ones of a nervous temperament, the first step in treatment is to discover and remove any source of nerve irritation, or cause of general low health. If the child has adenoids, or suffers from chronic constipation or rickets, these abnormalities should at once be put right by suitable treatment.

Each recurrent attack acts as an incentive for another (Bellingham Smith), because it leaves the nervous system more excitable and less stable. Every effort, therefore, should be made to prevent future attacks, or, at any rate, to postpone them as long as possible. To hold the attacks in abeyance until the child can grow out of the tendency to them, rather than with any hope of actually curing the disease, drug treatment should be tried, in addition to the measures already mentioned.

With the view of preventing their occurrence, the following mixture may be given every night at bed-time, if the attacks regularly occur at night :

R					
Potassium iodide	..	..	..	..	8 grains
Tincture of belladonna	..	..	..	..	32 minims
Ethereal tincture of lobelia	..	..	..	..	16 minims
Water	..	..	..	..	enough to make 2 ounces

Make into a mixture. Give one teaspoonful nightly to a child one year of age.

For older children, Dr. Bellingham Smith recommends the same prescription, allowing half a grain of the iodide for each year of life, two to ten minims of tincture of belladonna from infancy to ten years, and lobelia in minim doses for every year of life up to five minims.

An iodide mixture such as the above may be given nightly for six or eight weeks, and then should be left off for a fortnight, when some tonic such as the following should be given in its place :

R

Iron and ammonium citrate	..	..	..	1 drachm
Arsenical solution	..	..	..	48 minims
Spirit of chloroform	..	..	..	2 drachms
Infusion of calumba	..	..	to make	6 ounces

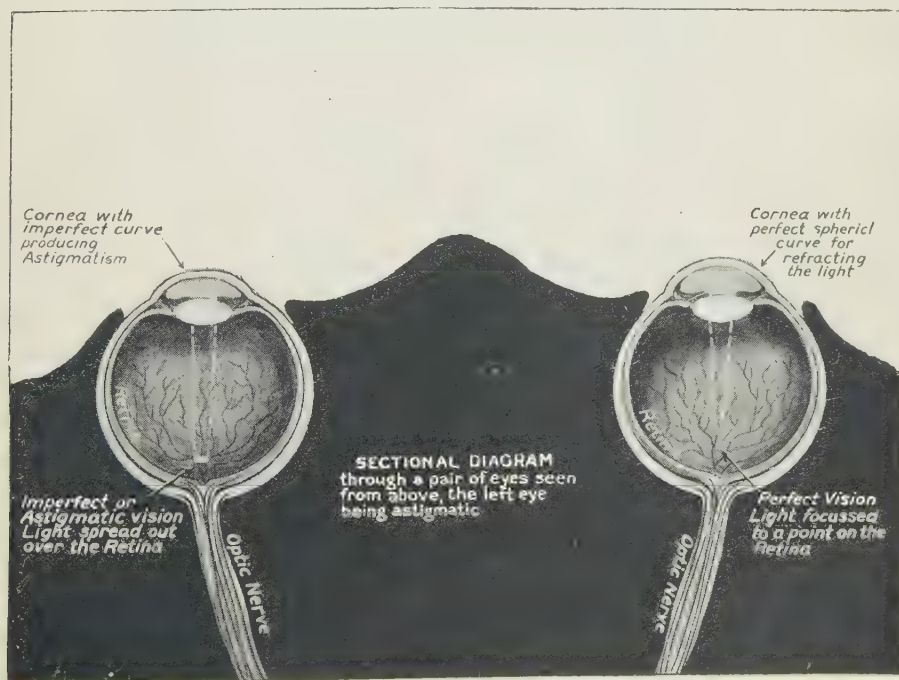
Mix. Dose for a child of six to ten years, one to two teaspoonsful in a little water three times a day after meals.

After a fortnight's interval the iodide treatment may be continued again.

During an attack the sudden plunging of the child into a hot bath often brings speedy relief from the breathlessness.

Sometimes emptying the stomach with an emetic of mustard and water will put an end to the attack. In others a good dose of oil may bring instant relief. Recourse to the powders and papers for burning, which give such good results in grown people, should be put off until everything else has failed, as their continued use tends, in the end, to increase the frequency of the attacks.

Whereas asthma is practically incurable in grown people, young children quite frequently grow out of the disease under proper treatment. This consists chiefly of building up the strength of the lung tissues by constantly keeping the child out in the open air, and protecting him from all over-fatigue, both mental



HOW THE BULGING OF THE CORNEA PRODUCES ASTIGMATISM

and physical. If possible, he should live in an equable climate, where practically every day of the year he can spend many hours in the open. Leading a life of this kind there is fair hope that the attacks will gradually lessen in frequency and severity until, as the child grows up, they disappear entirely. Since all nervous excitement increases the liability to asthmatic attacks, the effects of school work should be carefully watched, and precociousness should be discouraged.

**ASTIGMATISM** is an abnormality of vision due to the bulging, transparent portion of the eye (the cornea), not being equally curved in all directions. Rays of light striking on the deformed cornea are therefore not accurately reflected on the inner, sensitive part of the eye, with the result that the vision is inaccurate. These inaccuracies can only be corrected by carefully fitted spectacles. There is no surgical or medical treatment possible.

**ASTRINGENTS** are drugs used to control bleeding, to reduce the out-pouring of fluids from mucous surfaces, and to stop discharges. Sulphate of zinc, alum, tannic acid, perchloride of iron and lead acetate are examples of astringents. A teaspoonful of powdered alum to a pint of warm water, for example, is a commonly used astringent vaginal douche in leucorrhœa.

For tightening loose skin about the face an astringent toilet lotion such as that prescribed below sometimes gives good results:

R

Powdered tragacanth	..	..	..	5 grains
Simple tincture of benzoin	..	..	..	60 minims
Rectified spirit	..	..	..	60 ..
Glycerine of borax	..	..	..	2 drachms
Rose-water	..	..	..	enough to make 6 ounces

Make into a lotion. Sop on to loose baggy skin with a soft sponge several times a day, and allow to dry on.

A compress, made by wringing out a handkerchief in this lotion, laid over the closed eyes for ten minutes, besides freshening up the skin, is restful and invigorating.

**ASYSTOLE** is the name given to a variety of heart failure in which that organ is unable to contract, owing to great weakness or to over-distension of its cavities with blood.

**ATAXIA** means a loss of governing power over one's muscular movements. A patient suffering from ataxia throws his legs about in a wild manner in walking because, although he can *move* his muscles, he cannot gauge the amount of muscular force he wishes to exert. Ataxia is a symptom in various nervous diseases (See LOCOMOTOR ATAXIA and DISSEMINATED SCLEROSIS).

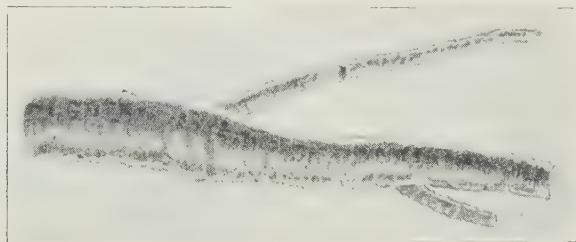
**ATELECTESIS** is collapse or failure of expansion of a portion of the lung. This condition is sometimes found in new-born children.



**ATHEROMA** is the name given to the degenerative changes which sometimes take place in the walls of the blood-vessels by which they become hard and brittle, and lose their elasticity.

Atheroma of a certain degree is always to be found in the vessels of old people. A premature atheromatous state of the blood-vessels is often found in heart and kidney troubles, and in those suffering from gout, syphilis, lead poisoning, and conditions which lead to a constant high blood pressure.

An atheromatous artery may show flat, roundish patches of degenerated tissue on the inner coat alone, or the abnormal changes may have affected the middle and outer coats as well, increasing the likelihood of an aneurism forming (*see* ANEURISM), or of the vessel's bursting should the blood pressure suddenly be raised as the result of mental excitement or physical exertion. Instead of being smooth and offering no friction to the passing blood-cells, the lining of an atheromatous artery may be sufficiently rough to lead to clotting taking place within it. If this clot completely blocks up the passage-way, gangrene of the part normally supplied by the vessel may take place.



THE INTERIOR WALL OF AN ATHEROMATOUS ARTERY

**Treatment.** When atheromatous changes have once taken place in an artery there is no treatment which can bring the vessel back to its normal state again. The measures the patient must take to minimise the dangers threatening on account of the atheromatous condition of these arteries are gone into fully in the article on ARTERIO SCLEROSIS, which is practically another name for widespread atheroma.

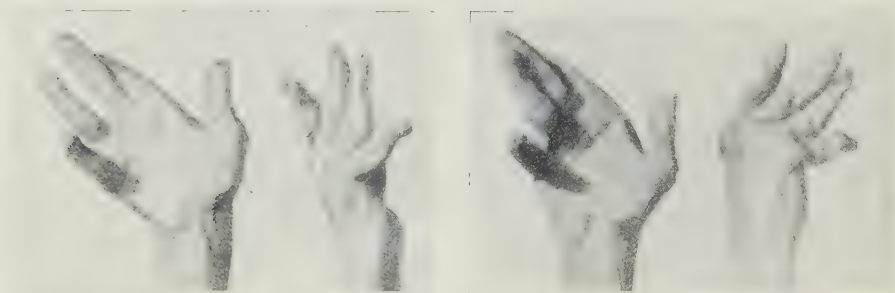
**ATHETOSIS** is the name given to slow continuous movements of the hands and feet in persons who have suffered from an attack of paralysis. The fingers are bent, straightened, and drawn from side to side. The paralysis may be due to softening or to hæmorrhage of the brain. Athetosis is more common in children than in adults, and may be present in a new-born child from injury at birth. The patient cannot stop the movements. Some cases gradually recover without treatment, but in the majority the affection is chronic.

**ATOMIZER.** A spray apparatus such as is used for perfumes. By means of an atomizer it is possible to spray medicated fluids on tissues that could not otherwise be reached, such as those of the larynx.

**ATONY** is loss of tone in the muscles of the body or any organ such as the stomach. In atony of the stomach-muscles food is not passed on to the intestine as quickly as it should be, and this gives rise to dilatation and atonic dyspepsia. Strychnine and other tonics, together with massage, are sometimes useful in this condition.

**ATRESIA** means closure, or absence, of a natural opening, chiefly occurring at the outlet of the bowel and of the vagina. The former is sometimes found in new-born children; the latter may exist at birth or be acquired in early childhood from inflammation of the parts. Sometimes it follows scarlatina. In closure of the vaginal opening no inconvenience results until puberty, when menstruation begins. Then the menstrual fluid, being unable to escape, accumulates first in the vagina, and later in the womb. As a rule, there is some dull pain, which gets worse with succeeding months.

The treatment consists of an immediate surgical operation to liberate the accumulated fluid. The quantity of fluid may vary from half a pint to two or three pints. The operation is not a serious one.



ATHETOSIS: CONTINUOUS HAND MOVEMENTS AFTER PARALYSIS

**ATROPHY** means a wasting of tissues either from disease, injury, or disuse. When the nerve leading to a muscle is destroyed the muscle atrophies or wastes through lack of use. In old age atrophic changes take place in practically all of the muscular frame. Atrophy is the opposite of hypertrophy in which, through over-nutrition or over-use, muscles or organs increase abnormally in size.

**ATROPINE OR ATROPIA** is the active principle of the belladonna plant or deadly nightshade. Its chief effect is to lessen the activity of practically all the glands in the body. It increases the rate of the heart beat because it paralyses the vagus nerve, whose function in health is to slow down the heart action.

It is much used in eye diseases, as it dilates the pupil widely. Externally atropine and belladonna are frequently used in the form of plasters in neuralgia and chronic rheumatism. Internally it is sometimes prescribed in consumption to prevent night sweats and in case of cough, where it is desired

to dry up the discharge. Belladonna plaster is sometimes applied to the breasts when it is desired to stop the secretion of milk.

Atropine is the antidote for toadstool poisoning. Both atropine and various preparations of belladonna are dangerous drugs, and should never be used except on a physician's directions. The practice of using drops of a very weak solution of atropine in the eyes to make them lustrous and limpid-looking or to enlarge the pupil is a most dangerous one, as the drug prevents the correct focussing of the eye muscles, and leads to serious eye-strain.

The dose of atropine and of atropine sulphate is 1-200th to 1-100th of a grain. The dose of the solution of atropine sulphate is  $\frac{1}{2}$  to 1 minim.

**POISONING BY ATROPINE OR BELLADONNA.** Sometimes the berries or leaves of the deadly nightshade or belladonna plant are eaten accidentally. The symptoms are rapid heart beat, sickness, dryness of the throat and mouth, and great increase in the size of the pupil.

**Treatment.** While waiting for the doctor's arrival give a large emetic of mustard and water (a teaspoonful of mustard to a glass of warm water) followed by several large cups of hot tea. The drinking of large quantities of fluid is an important part of the treatment, for the poison is largely got rid of through the kidneys. If the breathing becomes very shallow, and the patient's skin becomes dusky, showing a lack of oxygen in the blood, artificial respiration (which see) should immediately be begun.

**AUDITORY NERVE,** the nerve of hearing, is the eighth of the great nerves given off from the brain. Coming off from the medulla (*See* BRAIN), it runs to the inner part of the ear, deep in the temporal bone.

**AURA.** Epileptics, immediately previous to an attack, often have some peculiar warning symptom which has been termed an aura. This may take the form of a sensation of sudden cold, a bright light or darkness, a singing or roaring sound in the ears, etc. The importance of the aura is that the patient may learn, by experience from it that a seizure is at hand, and so may prevent unnecessary falls and other injuries by immediately lying down.

**AURICLE** is the name given to the external part of the ear, and to the two upper chambers of the heart.



THE BELLADONNA PLANT

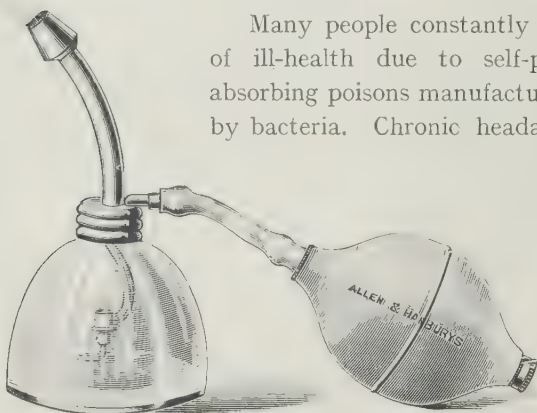
**AUSCULTATION** is the method of listening to the sounds of the heart and other internal sounds by means of the stethoscope, or by applying the ear directly to the patient's body. In this way the physician can obtain valuable evidence, helping him in diagnosing the various affections of the heart and the lungs. Auscultation is also valuable in cases of aneurism, in some diseases of the stomach and gullet, and in certain tumours of the womb. From after the fourth or fifth month of pregnancy, the heart of the developing child can be heard beating on applying the stethoscope to the lower part of the mother's abdomen. This is the most reliable of all the signs of pregnancy.

**AUTO-INTOXICATION** means self-poisoning from poisons or toxins developed within the body.

A serious form is the auto-intoxication of diabetes or chronic kidney disease, in which the patient develops well-recognised symptoms (loss of consciousness, convulsions, etc.) due to the reabsorption of poisons which because of his disease are not being eliminated at the normal rate from his system.

Many people constantly suffer vague symptoms of ill-health due to self-poisoning, the result of absorbing poisons manufactured within their intestines by bacteria. Chronic headaches, anæmia, rheumatic

pains, nervousness, and constant mental depression are symptoms of this type of auto-intoxication. Constipation is a common symptom, and the urine is often high-coloured and reduced in amount.



AN ATOMIZER FOR SPRAYING PERFUMES AND MEDICATED LIQUIDS

**Treatment.** A thorough overhauling of the diet is the first step in treatment. Where a sense of fulness after meals and the belching and passing of wind show that fermentation by the action of bacilli on food refuse in the intestines is constantly going on, the diet should be largely made up of meats, meat broths, fish, fowl, etc., all starchy foods, bread, potatoes, etc. being rigorously avoided. The sufferer should take special pains to chew his food well, should drink plenty of water between meals, and see that the bowels are opened regularly every day. For this purpose an aloin dinner pill (*see* ALOIN) may be taken with advantage. In this type of case, where the auto-intoxication is the result of abnormal fermentation of starchy foods in the intestine, the dietary given on the following page is recommended (Chalmers Watson).





AUSCULTATION : LISTENING TO HEART SOUNDS WITH THE STETHOSCOPE

Above : lady doctors using stethoscope on children. Below : a class of students listening to a patient's heart sounds.

7 *a.m.* A tumblerful of hot water.

8 *a.m.* *Breakfast.* Tea, one cup (without sugar) and with milk, not cream ; a good helping of fried bacon or fish or eggs, or cold ham, tongue, or grilled kidney. One slice of thin toast with a very little butter.

11 *a.m.* One tumblerful of soured milk, and a plain, sweet biscuit.

1 *p.m.* *Lunch.* Fish or chicken or game, or chop, steak, or roast beef or roast mutton ; biscuits, or roll with cheese and butter ; cup of coffee.

4.30 *p.m.* Cup of soured milk and half a slice of sponge cake or biscuit.

7 *p.m.* *Dinner.* Clear soup, unthickened, meat as at lunch, without vegetables ; dry toast, and a simple gravy ; pudding in form of custard, curds, jelly, cream, or stewed fruit, without added sugar ; no coffee.

10 *p.m.* Drink of hot water.

Where extreme offensiveness of the stools suggest that the trouble is due not to abnormal fermentation of starches and sugars, but to putrefactive changes in the meaty elements in the diet, the result of bacterial action in the intestines, the meats should be cut down to a minimum, and the diet should be largely of bread, milk, starchy foods, green vegetables, and fruits. The dietary recommended for these cases is as follows (Chalmers Watson) :

7.30 *a.m.* Tumblerful of hot water.

8 *a.m.* *Breakfast.* Porridge, hominy, or prepared oats, with cream ; toast, or roll with butter and a little marmalade, if desired ; one cup of tea.

11 *a.m.* One glass of soured milk with biscuit.

1 *p.m.* *Lunch.* Egg in some form or vegetable savoury, e.g., cauliflower *au gratin* ; tomato savoury ; plain milk pudding with cream.

4 *p.m.* One cup of soured milk with a piece of sponge cake.

7 *p.m.* *Dinner.* Vegetable or milk stock soup, e.g., tomato, artichoke, potato, lentil, or onion ; fish occasionally, or egg in some form, if not taken at lunch, or vegetable savoury ; pudding or stewed fruit ; no savouries, and no coffee.

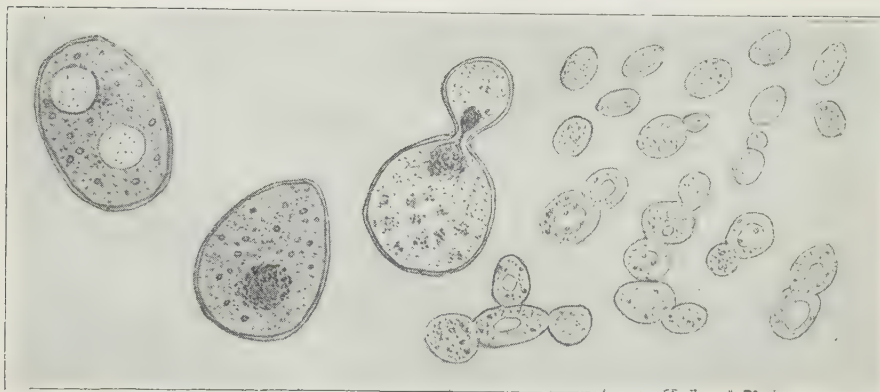
10 *p.m.* Tumblerful of hot water.

The sufferer from intestinal auto-intoxication of either variety should realise that he is not so constituted as to be able to indulge in indigestible foods of any kind with impunity. The following articles should only be taken in the most restricted amounts (Chalmers Watson): Marmalade, jams, sugar, sweets, and confectionery, pastry, sweet cakes, new bread, and hot rolls, made-up dishes of all kinds and all canned foods ; pickles, sauces, spices, rich gravies, lobsters, mushrooms, shrimps, sardines, salmon, mackerel, raisins, nuts, pears, and all preserved fruits.

**AUTOPSY** is another name for a post mortem examination. An autopsy is usually held in cases where doubt exists as to the cause of death.

**AXILLA** is another name for **ARMPIT**.

**AZOTIZED BODIES** are substances containing nitrogen.



A FERMENT IN EVERYDAY USE: CELLS OF THE MICROSCOPIC YEAST PLANT

Yeasts and molds come within the scope of the bacteriologist's investigation as well as purely pathogenic bacteria. The individual yeast cell is less than 1-2,500th part of an inch in diameter. They are without chlorophyll. The cells on the left, more highly magnified to show vacuoles and nucleus (the dark body), are inactive. Next is a cell budding, with the nucleus dividing, and on the right are active cells budding and forming groups as they do in ordinary domestic yeast when used.

**BACILLUS** is the name given to the rod-shaped type of micro-organism or disease germ. The germ of tuberculosis, for example, is a rod-shaped bacillus. (See BACTERIA.)

**BACKACHE.** Not a disease in itself, but nearly always a symptom of some other ailment, backache may be due to a local cause, or the pain may be referred to the back muscles from some internal organ. Backaches, therefore, may be divided into (1) those directly connected with the back muscles, and (2) those in which the pain, although felt in that region, is the result of disease in the deeper structures.

Backache from lumbago, stiffness from over-exercise, or chill, or weakness from growing too fast, are common examples of the first type. In the second variety where the pain is felt in the back, although it really originates elsewhere, Bright's disease of the kidneys, menstrual and pelvic troubles in women, and gall-stones are examples. Many of the acute fevers, such as small-pox and influenza, frequently begin with severe backache.

**Treatment.** This, of course, depends entirely on the cause of the pain. If due to muscular stiffness or lumbago, rest in bed with warmth to the back, either from a mild mustard plaster or by hot water bags, etc., and later the rubbing in of a soap liniment or other warming embrocation gives the surest relief. If the pain is referred, as from Bright's disease or other internal cause, local treatment is of little avail until the cause itself is removed.

Where the backache is due to chill of the muscles of the small of the back, the following liniment well rubbed in often gives great relief:

R̄

Menthol	...	..	..	..	..	1 ounce
Chloroform	..	..	..	..	..	1 "
Olive oil	..	..	..	..	..	4 ounces

Rub in well, and then cover part with a cotton wool pad and bandage.

L

Where the pains in the back are part of chronic kidney disease, the following mixture may bring relief :

R	Solution of potash .. .. .	6 drachms
	Oil of juniper .. .. .	6 "
	Oil of turpentine .. .. .	3 "
	Copaiba .. .. .	1 ounce
	Spirit of nitrous ether .. .. .	1 "
Make into a mixture. Take ten to twenty drops in a little water, and repeat in three hours if necessary.		

Another classic " kidney and backache mixture " is :

R	Potassium acetate .. .. .	1 drachm
	Spirit of juniper .. .. .	1 "
	Spirit of nitrous ether .. .. .	4 drachms
	Infusion of broom .. .. .	6 ounces
Make into a mixture. Take two to three teaspoonsful in a half wine glass of water every four hours.		

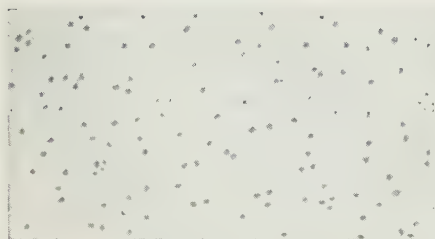
**BACTERIA** are vegetable organisms so small as to be quite invisible to the naked eye. They contain no green colouring matter (chlorophyll), hence they cannot get carbon from the air, and must live as parasites on the organic matter of animal or vegetable bodies. Earth, air, and water teem with bacteria. Our skins are crowded with them, they swarm in countless millions in our intestines.

Fortunately the great majority of species are harmless to man. A great many, in fact, are helpful and necessary. " Life without microbes is not conceivable at the present day," Professor Metchnikoff has said. It is they that change grape juice into wine, wine into vinegar, malt into beer, that ripen cheese, " raise " bread, cure tobacco, and serve a hundred other useful purposes in the industries. Were there no microbes there would be no decay. Dead animals and vegetables would remain unchanged and encumber the earth.

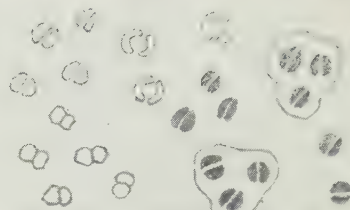
Microbes are, therefore, far from being wholly an evil, but a certain number of species are pathogenic, that is, generators of disease. In medicine it is these harmful microbes we are mainly concerned with.

Probably all infectious diseases are caused by microbes. We cannot say so with scientific certainty, for causative germs have not yet been identified in all the infections. But their agency has been proved in a large number of diseases, and other diseases in which no germs have yet been isolated follow so similar a course that their bacterial origin can scarcely be doubted. In the former group, diseases actually proven to be bacterial are anthrax, plague, typhoid fever, Malta fever, pneumonia, syphilis, gonorrhœa, and many others. In the latter group are scarlet fever, measles, whooping cough, and chicken-pox. Besides these there are diseases such as cancer, which may or may not be bacterial, but as to whose cause we know nothing with certainty.

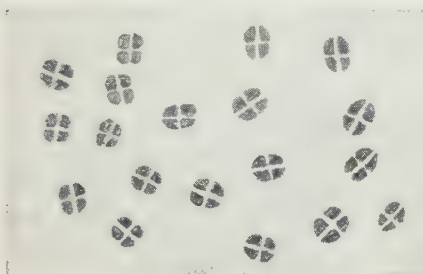




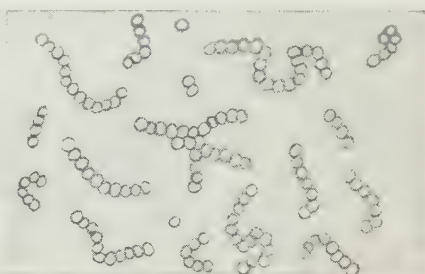
MICROCOCCI



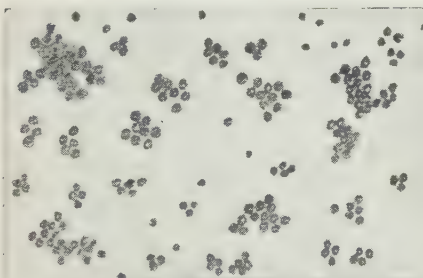
DIPLOCOCCI



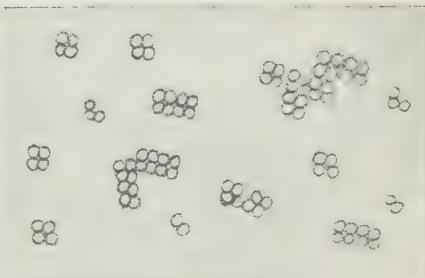
TETRACOCCI



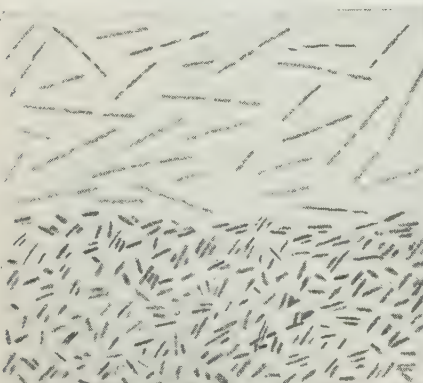
STREPTOCOCCI



STAPHYLOCOCCI

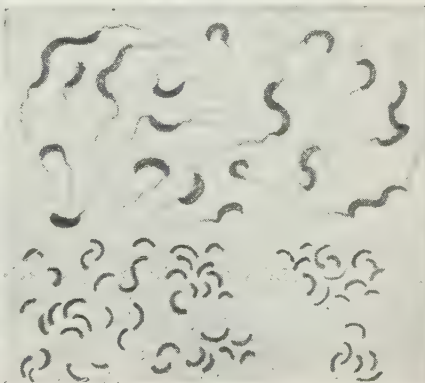


SARCINÆ



ROD-SHAPED BACILLI

Two varieties, the bottom being the bacillus coli.



CURVED BACILLI

The spirilla with flagella and the comma-shaped bacillus of cholera.

While the bacteria are vegetable bodies, there are other disease-producing microbes which belong to the animal kingdom. Thus the bacilli of consumption and typhoid fever are vegetables; the parasites of malaria and sleeping sickness are animals. And between the two are the plant-animals, the protozoa, which contain the green colouring matter, chlorophyll, and can manufacture their food in the same way as green plants. The bacteriologist deals with all kinds of microbes, including also moulds and yeasts.

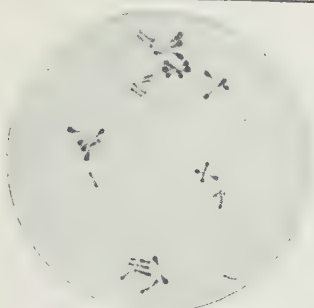
Bacteria are classified according to their external form. Globular bacteria are called cocci or micro-cocci. Some of these live singly, others in pairs (diplococci), others in groups of four (tetra-cocci), others in a chain like a necklace (strepto-cocci), others in a cluster like a bunch of grapes (staphylococci), others in a form of a wool-pack (sarcinæ).

Rod-shaped or long bacteria are called bacilli. Curved bacteria are known as vibrios, spirilla and spirochaetes. The germs of tuberculosis, typhoid fever, diphtheria and tetanus are bacilli, the germ of cholera is a spirillum; one of the germs of pneumonia is a coccus, the pneumococcus.

Most bacteria are *aërobes*, that is, they live in the presence of air; some, the *anærobes*, live only where air is absent; a few can exist under both conditions.

**The Universality of Microbes.** Microbes multiply with enormous rapidity. "Normally we enter the world free from microbes. But from the first moment after birth they begin to settle on our skin and our mucous membranes. Our mother's first touch communicated them to us. They penetrate the nose, the mouth, and the lungs with our first respiratory movements. They are deposited on our skin from our first bath and our first swaddling clothes. Even four hours after birth, and invariably between the tenth and seventeenth hour of life, they have already reached the intestine. However healthy the skin, it is more or less inhabited by bacteria which, however, in general remain harmless; the skin is not infected. But given at some point a lesion (injury), a boil or pustule, where bacteria have multiplied, the microbes of these foci spread themselves over all the cutaneous (skin) surface, even to the most distant parts. Hence the best way to avoid cutaneous infections is to preserve intact the epidermis."—Dr. Etienne Burnet of the Pasteur Institute.

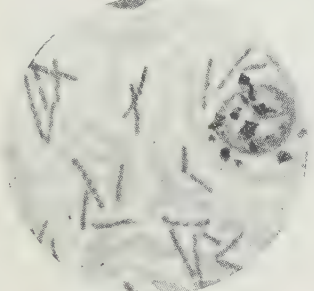
In the nose, mouth and pharynx bacteria in large numbers are constantly present. Some of these may be disease microbes, such as the germs of pneumonia, diphtheria, and cerebro-spinal meningitis. So long as the host remains in vigorous health, they may be quite unable to prevail against his natural defences. But they await their opportunity, and when his vitality is lowered by fatigue, want of food, worry, a chill, etc., the germs multiply, overpower the host's resistance, and give rise to an attack of illness. This explains the apparent origin of disease from a wetting, sitting in a draught, overwork, a shock, etc.,



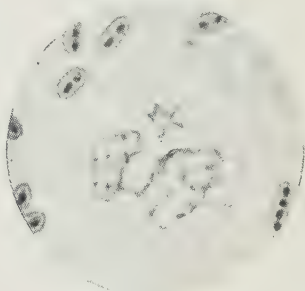
DIPHTHERIA BACILLUS



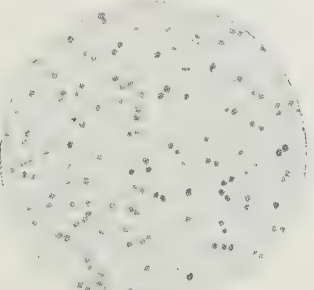
ERYSIPELAS STREPTOCOCCUS



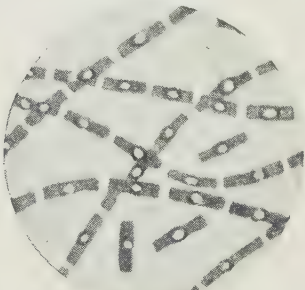
BACILLUS OF TUBERCULOSIS  
Bacteria with white corpuscles.



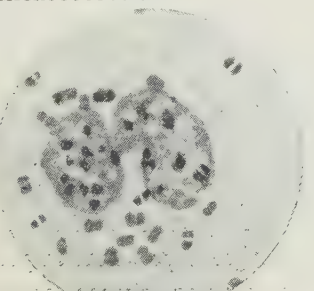
DIPLOCOCCUS OF PNEUMONIA  
Bacteria in capsules with white corpuscles.



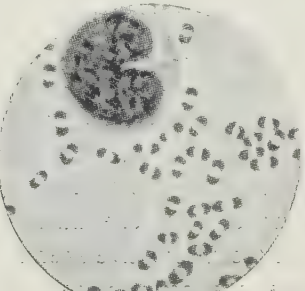
MICROCOCCUS OF MALTA FEVER



ANTHRAX BACILLI WITH SPORES



DIPLOCOCCUS OF MENINGITIS  
Absorbed by a white blood corpuscle.



BACILLUS OF PLAGUE  
Stained at ends only. With lymph and blood corpuscles.

SOME PATHOGENIC VARIETIES OF BACTERIA

The two microphotographs at the top are given by courtesy of Messrs. Burroughs, Wellcome & Co. Their magnification is 1,000 diameters. The rest are magnified 2,000 times.

which are only *predisposing* causes, although they appear to us, ignorant of the presence of the microbes, to be the *actual* causes of the illness.

**The Bacteria of the Intestines.** The bacterial contents of the stomach, and the small intestines are not of great amount, but the large intestine is the reservoir of innumerable billions of microbes. Of these the commonest and the most abundant is the bacillus coli, which by its action on the food contents produces numerous foul-smelling gases. According to Metchnikoff's theory, it is these products absorbed into the blood which produce the chronic poisoning which brings on premature old age. In addition to the bacillus coli, there are other species of bacteria which lead to the putrefying of meaty or albuminous material in the large intestine.

Some authorities assert that the bacteria of the large intestine are useful and beneficial; others contend that they are harmful, poisonous to the body, the cause of atheroma of the arteries, and of other changes which make a person grow old prematurely. These bacteria cannot live in the presence of acids. Hence Metchnikoff's advocacy of sour milk to ward off old age.

But against this great scientist's theory, others argue that the acidity produced in the intestine by the sour milk bacilli is too weak to destroy the bacteria there present, and that Metchnikoff's theory is a fallacy.

An interesting and very important fact concerning bacteria in the intestine has been demonstrated within the past few years. Formerly it was believed that they could not pass from the intestine into the blood. Typhoid fever, for example, was regarded as a disease in which the typhoid bacilli multiplied in the small intestine, but did not penetrate its wall. All they could do was to manufacture poisons which were absorbed into the blood.

It is now known that the typhoid bacilli usually pass into the blood and are circulated to every part of the body. The discovery of this fact lent weight to the theory that consumption, or tuberculosis of the lung, is frequently caused by the passage of tubercle bacilli, swallowed in milk, from the intestine to the lung. Some great authorities assert that bacilli swallowed in milk during childhood, and causing tuberculosis of the glands at the back of the abdomen, may invade the lung when the person grows up. Probably if the intestine is sound, and the subject in vigorous health, microbes cannot pass through the wall of the intestine.

**How Bacteria may be Destroyed.** Microbes are destroyed by light, heat, bactericidal drugs, and other agents. But although so minute and simple, consisting of only one microscopical cell, bacteria differ greatly in their resistance to destructive agents. This is a fact of great practical importance.

There is a popular idea, for instance, that smoking tobacco, or drinking alcohol suffices to kill all microbes in the mouth, air passages, stomach, and even in the intestine. Some people believe that if a little hot water is added to milk all its bacterial contents will be destroyed.





BACTERIA AND FLOOD PARASITES

The first five represent the malaria germ in various stages (see also page 107). A, is the early ring form of the germ, B, the developing germ, C, the growth of the germ (amoebula) which is ready to break up in D. E, is the crescent, the final form in human blood. F, the filaria embryo, is the cause of elephantiasis. G, is the trypanosoma of sleeping-sickness, and H, the characteristic cells found in a tropical disease called kala azar.

The remainder are types of disease-causing bacteria. I, spirochæta of relapsing fever; J, spirochæta of syphilis; K, tuberculosis bacilli with pus cells (from the white corpuscles); L, diphtheria bacilli; M, spirilla of Vincent's angina; N, meningococci within a white corpuscle; O, pneumococci and pus cells; P, staphylococci and pus cells; Q, streptococci and pus cells; R, gonococci; S, actinomyces (see page 28); T, tetanus bacilli with spores.

From French's "Differential Diagnosis" (Wright, Bristol) by permission.

These mild antiseptic measures have absolutely no power to destroy bacteria. To judge their efficacy it is only necessary to recall the experiments which have been carried out on the different species to ascertain their resistance. For example, even the least hardy types require an exposure of some minutes to a temperature of 140° F. before they are killed.

The spores, or off-shoots, of the anthrax bacillus, which under suitable conditions develop into anthrax bacilli, resist the temperature of boiling water for two or four minutes, and there are other spores which require sixteen hours boiling for their destruction.

Another quite fallacious popular belief is that cold weather is healthy because it destroys all microbes. As a matter of fact bacteria stand the most extreme cold very well. The spores of the anthrax bacillus germinate after being kept at a temperature of 202° below zero for twenty hours. This is a degree of cold never found on the earth.

Light is exceedingly injurious to bacteria, and therefore an admirable disinfectant. Sunshine cleanses a room of dangers to health better than a vacuum cleaner. It is the chemical rays of light which kill the bacteria, and a few hours exposure to it will destroy most species.

The tubercle bacillus is killed in ten minutes by exposure to the ultra violet rays of light, and even one minute's exposure greatly reduces its violence. But to light, as to heat, spore-bearing microbes are very resistant. Anthrax spores can survive exposure to sunlight for a period of thirty hours in contact with air; if enclosed in a glass vessel from which all air has been removed they live for eighty hours.

These facts prove how necessary it is to study the nature of microbes in order to devise protective measures against them.

One of the most valuable discoveries made in bacteriology is the curious fact that the virulence of bacteria can be increased or diminished. If disease germs be grown on gelatine or some other culture medium, their power to produce disease is decreased. Other agencies produce the same result. These include a high temperature, light, oxygen under pressure, etc. Passing a disease through a series of animals, from one to another, also sometimes reduces its virulence.

On the other hand the virulence of certain disease germs is increased by passage through suitable animals, the microbes growing more lusty when given the food which agrees with them best. Thus if a rabbit is artificially infected with hydrophobia, a second rabbit infected from the first, and a third from the second, and so on, the result will be an intensifying of the virulence of the germs. Here again there are great differences in the behaviour of different species. The tubercle bacillus, for instance, does not increase in virulence when subjected to this process. If swine fever is passed through a series of rabbits it becomes more virulent, if through a series of pigeons less virulent.

**A Theory of Epidemics.** These modifications of virulence which can be effected artificially are probably always occurring in nature. It is in the following way that Pasteur explains the occasional occurrence of great epidemics, their subsidence, and ultimate disappearance.

“There exist virulent diseases which appear spontaneously in every country: such is, for example, the typhus fever of armies in the field. Without doubt the microbes responsible for those maladies are to be found everywhere. Man may carry them on his body or in his alimentary canal without suffering great harm, but they are, nevertheless, ready to become dangerous when, under condition of overcrowding and successive developments on the surface wounds, in weakened bodies or otherwise, their virulence becomes progressively reinforced.

“Virulence thus appears under a new light to us, and one which is distinctly disquieting for mankind, unless Nature, during the past centuries, has already met with all the opportunities possible of developing virulent or contagious diseases, which is highly improbable.

“A microscopical organism harmless for man or for a given animal species, is simply a creature which cannot develop in our bodies or in the body of the given animal. But there is nothing to prove that if this microscopical creature succeeded in penetrating another of the many thousand species of animals in creation, it might not invade and produce in it disease. Its virulence then reinforced by successive passages through individuals of this species might become powerful enough to attack man or the domestic animals. In this way it is possible to create virulence and new contagions.

“I am much inclined to think it is thus that there have appeared, throughout the ages, small-pox, syphilis, plague, etc., and that it is by phenomena of this kind that great epidemics have appeared from time to time.” (Pasteur.)

We call it infection when disease germs gain access to the body, overpower its defences and there multiply and manufacture substances poisonous to the host. Germs gain access to the body in various ways. Some in food and drink, through the mouth in the water, milk, etc., as the typhoid fever and cholera germs; some in the air and dust, through the nose, as the germs of consumption, influenza, common colds, and the various other diseases of the air passages and lungs; some through wounds and scratches of the skin as the germ of tetanus, an inhabitant of soil, especially garden soil. Small-pox, measles and scarlatina may be transmitted by contact, and are therefore called contagious diseases.

All kinds of raw foods may contain the germs of disease, milk of tuberculosis and typhoid fever, meat exposed in butcher's shops—not only its own parasites but the microbes blown on to it in street dust—oysters and watercress, the germs of typhoid fever or cholera. A species of mosquito conveys the parasite

of malaria [see page 104], fleas may carry plague to man from rats, and the fur of dogs and cats may contain the germs of ringworm and many other diseases.

When microbes once invade the tissues they make their home in one part or another according to their species. Thus the tetanus (lockjaw) bacillus fixes itself in the nerves and slowly travels up the spinal cord; the typhoid bacillus lodges principally in the small intestine; the dysentery bacillus, even if inoculated under the skin, makes its way to the large intestine; the parasite of malaria enters the red blood corpuscles.

**Defences Against Bacteria.** Fortunately our bodies possess powerful defences. In the blood are present a great army of phagocytes (cell-eaters), the white corpuscles, which rush to the point invaded by the microbes and attack them with vigour. Whether we shall succumb to the microbes' attack or not depends on the issue of the battle. Such conflicts are going on always in our bodies, for we are being continually invaded by hostile microbes.

In most cases our phagocytes are victorious. But now and again they fail. And here we may see the necessity for always keeping the health at its highest possible degree. Failure to resist an attack of disease germs, whether of a common cold or one of the most serious maladies, may result from the large number of the attacking microbes, or from lowered energy of our phagocytes due to fatigue, hunger, indigestion, chilliness, poisoning by impure air, and other like conditions.

Even when the microbes gain a victory and establish themselves the body does not relinquish the struggle. The phagocytes continue to devour the microbes, and the blood and other fluids manufacture or make use of already manufactured substances to neutralise the poisons which the microbes create.

But at the same time the microbes defend themselves. "The parasite attacks by secreting toxic (poisonous) substances, and defends itself by paralysing the digestive and expulsive powers of its host; the latter exerts a noxious influence on its aggressor by digesting it or by eliminating it from its body, and it can defend itself by means of secretions." (Metchnikoff.)

Sometimes the power for evil of the microbe is destroyed, but the microbe itself takes shelter in some part of the body and remains there. Then some day, when the body's vitality is lowered the microbe successfully renews the attack. This fact may explain those curious cases of tetanus resulting from heat-stroke. The tetanus, according to this theory, is due, not to the heat but to the hiding tetanus spores which germinate when the opportunity arises.

It is extremely important to discover the microbe to which each disease is due, firstly in order that we may know how to avoid infection, and secondly that we may be able to adopt rational curative measures.

But the difficulty both of bringing the microbe into view and of proving any particular germ to be the cause of a particular disease is always very great.





DIAGRAMMATIC REPRESENTATION OF THE DESTRUCTION OF DISEASE GERMS BY THE PHAGOCYTES OF THE BLOOD

Typhoid bacilli are represented as entering the blood stream where they are immediately seized upon and absorbed by the phagocytes (white blood corpuscles). So long as health is maintained the activity of the phagocytes is sufficient to prevent disease in this way; but lowered vitality may procure the victory of disease germs over the phagocytes and illness result.

To make it visible it must be stained with some colouring matter, and to find the suitable process for staining the microbe is often a laborious task. Having found it in one case of the disease, we must next find it in a large number of cases. But a microbe may be invariably or almost invariably present without being the cause of the disease. We must, therefore, make a culture on gelatine, or some other suitable germ-food, separate out this particular microbe from the others which grow in the culture, and then, having obtained what is called a "pure culture," we must transfer it to the body of an animal. In this animal it must produce effects similar to those of the disease in the human being. But some animals are resistant to many of the human diseases, and cannot be infected. Cholera, for instance, can be reproduced in few, if any, of the animals experimented on in the bacteriologist's laboratory. It may, therefore, take a long time to find one susceptible to the disease under investigation. When at length successful, the bacteriologist must next find the same germ in the animal's body.

Not until then can he say he has found the microbe of the disease. But unfortunately all microbes are not visible, even under the most powerful microscope. We cannot see any object which is less than 1-250,000th of an inch in diameter, and there is reason to believe that some microbes are smaller than this. We know from their effects that they exist, and are potent for evil. But we cannot see them.

**BAKER'S ITCH.** In this inflammatory affection of the skin, common among bakers, the best remedy is to cease working for a time. In cold weather, as a preventive measure a little glycerin should be rubbed on to the hands after washing. They should then be thoroughly dried. If the sufferer must keep at work, he should wash the hands at bedtime, first with olive oil, and then with soap and water, and then cover them with strips of cloth on which a little weak boracic ointment is spread. Next morning he should remove the cloth, and rub the hands with a mixture of one part wax and two parts lanoline.

**BALANITIS** is an inflammation of the inner surface of the foreskin and the underlying parts. The usual cause is lack of cleanliness. The normal secretions of the glands in the skin, if not removed by daily bathing, decompose and set up local irritation, or perhaps inflammation with a foetid discharge. Bacteria, gaining access from uncleanness, may set up a painful and intractable balanitis.

**Treatment** consists of carefully bathing the part in warm water with a bit of soft cotton wool several times a day, and then drying and sprinkling on some mild antiseptic dusting powder, such as equal parts of acetanilide and powdered oxide of zinc.

If there is much swelling cold-water bandages should be applied until the swelling subsides. If the glands in the groin become painful and swollen the doctor should be consulted at once, as they may require lancing.

A lotion of bichloride of mercury, two grains to eight ounces of water, sopped on at intervals during the day, often gives good results. This preparation is a strong poison if taken internally, and must be used with adequate care.

A cheaper powder which may be used in place of the above is the following

R	Zinc oxide, powdered	..	..	..	..	1 part
	Boric acid	..	..	..	..	1 "
	Starch	..	..	..	..	3 parts

Mix well. Apply locally as a dusting powder.

**BALDNESS OR FALLING HAIR** may be partial or complete, and may be divided into four main classes: (1) congenital, (2) premature, (3) the baldness of old age, and (4) patchy baldness or Alopecia Areata (*See* ALOPECIA AREATA).

In congenital baldness the infant may be born with a partially or completely bald scalp. The condition is considered to be due to an under-development of the hair-roots themselves. There is usually a history of a pronounced tendency to baldness in one or both parents.

There is no treatment which appears to have any effect in encouraging the growth of the hair. In the majority of cases the baldness persists throughout life. In some, however, a sparse, stunted growth may gradually appear.

**Premature Baldness** is divided into two main types: (1) "Idiopathic," in which there is no recognisable disease of the scalp associated with baldness, that is, there is no apparent cause for the baldness, and (2) "Symptomatic," which depends on some local or general disease of the scalp or body.

The idiopathic type only accounts for about one case in ten of premature baldness—that is, baldness or excessive falling of the hair beginning before thirty and not associated with greyness of the hair. The condition closely resembles the baldness of old age, the new hairs which are constantly appearing in health being less and less vigorous, and falling out earlier than usual until, after a few years of pronounced thinness of the hair, the greater part of the scalp may be bald before the subject is thirty.

The thinning may begin over the vertex or crown of the skull, and in the early stages may somewhat resemble the priest's tonsure, or it may begin above the temples and work backwards.

**Causes.** Frequently the tendency to premature baldness is hereditary. Those who live sedentary lives—clerks, business men, and other brain workers—are most commonly attacked. The continuous wearing of tight-fitting, hard hats is considered to induce this type of baldness.

One of the most active causes is the daily use of water on the hair. The water, in drying, mixes into a paste with the secretion normally formed by

the glands in the scalp, and this paste, "setting" like mortar in the form of hard plugs about the hairs, as they emerge from the scalp, interferes with their growth, and leads to their early death and premature fall.

Another theory as to the cause of premature baldness without apparent cause is that it is due to circulation in the blood of poisons which have been absorbed from the used-up air which is left in the upper part of the lungs of people who are habitually shallow breathers. The fact that men breathe chiefly from the diaphragm, expanding the upper part of the lungs little or not at all at each in-breath, whereas women use the diaphragm little, but breathe chiefly by expanding the whole chest, is, according to this theory, the chief reason why women suffer so much less frequently from actual baldness than do men.

The shape of the head also appears to have something to do with the causation of early baldness, narrow, irregular skulls predisposing to it.

A tightness of the scalp, which is likely to be more pronounced in men than in women and which leads to a less abundant circulation to the hair-roots, is another theory of the causation of this type of baldness.

Other reasons why women are less subject to premature baldness than men are :

1. Their hats are looser, lighter, and more permeable to the air, and so the hair is better ventilated, and there is less likelihood of pressure on the scalp vessels reducing the blood supply to the hair-roots.

2. Women give more care and attention to the brushing of the hair.

3. They very seldom use water on the hair.

4. Their hair is cut less often.

5. They rarely wear tight collars which, by pressing on the neck arteries, may appreciably reduce the blood-supply to the hair.

The outlook in "idiopathic" premature loss of hair depends largely on the extent of the disease. If the scalp is smooth, shiny, and stretched, with only a few fine, furry hairs apparent, no treatment will be of any avail. On the other hand, if the thinning and falling of the hair has not passed beyond the stage where there is a sparse but unmistakable crop of hairs covering the whole scalp, vigorous treatment, conscientiously carried out, can be relied upon to give good results.

**Treatment** is included in that of "symptomatic" premature baldness.

**Symptomatic Baldness**, which depends on some local or general disease of the scalp or body, may be divided into four types :

1. Baldness associated with a scurfy or scaly condition of the scalp.

2. Syphilitic baldness.

3. Baldness following acute fevers.

4. Baldness due to destruction of the hair-roots through scar formation following eczema, impetigo, lupus, and similar diseases attacking the scalp.



The first type, baldness associated with a scurfy or scaly condition of the scalp, accounts for by far the greater proportion of the cases of premature baldness with men and pronounced thinning of the hair in women occurring before middle age and unaccompanied by greyness of the hair.

The beginning of the scurfy condition of the scalp (which is a disease in itself) usually can be traced back to the period of change from childhood to adult life, or, in other words, to the patient's fourteenth or fifteenth year.

This condition of fine whitish scales, readily detachable from the scalp, and frequently covering the shoulders, may have continued without any marked change for five or six years, when at the age of twenty or thereabouts the dried branny scales in the hair become replaced by a more greasy, yellowish, sticky type of dandruff. There may now be constant itching of the scalp.

The scurf here no longer comes away as freely as in the earlier years, but now the hairs themselves begin to fall. At first this fall occurs only in the summer, but very soon it becomes continuous. (D. J. Guthrie.) In women at this stage the hair begins to lose its gloss, and becomes sparse and thin, the white of the scalp appearing as a wide band wherever a parting is made.

The loss of hair is uniform all over the scalp, and actual bald patches practically never occur in women. In young men, on the other hand, a round bald patch may develop at the crown, while the hair recedes backwards from over the temples, leaving two triangular bare spots, one on each side of the central growth of hair, which extends as low as ever down towards the forehead. These three areas of baldness gradually get larger until, in a pronounced case, the whole top of the head may be absolutely bald.

Where the fall begins as early as eighteen or twenty the subject may be markedly bald before thirty.

The outlook here is infinitely better than in premature baldness without apparent cause. Unless the scalp is smooth and shiny with only a few furry hairs left, great improvement can almost always be promised. If no actual baldness has



SCURF IN THE HAIR CAUSING PREMATURE BALDNESS

A scurfy condition of the scalp (dandruff), which is a disease in itself, accounts for the majority of cases of premature baldness and falling hair in men and women.

developed, but only a pronounced thinning, the fall can be abruptly stopped, and a certain amount of new growth can nearly always be brought about under conscientiously carried out daily treatment.

**Treatment of (1) Baldness Associated with Dandruff, and (2) Premature Baldness from no Apparent Cause.** The first step in treatment is to put an end to any of the causes which may be active in increasing the baldness. Thus a hard, tight hat, such as a closely-fitting bowler, should be replaced by something softer and looser. All wetting of the hair should be forbidden. Tight collars should be given up. Then, before making any local application to the hair or scalp any scurfy scales or greasy matter on the scalp, blocking up the mouths of the tiny pits in which the hair roots are embedded must be removed. A simple way to accomplish this is to shampoo the head well with tar soap, massaging the scalp thoroughly with the finger-tips in the process, and using several rinsings afterwards. If necessary, any crusts present may be softened by first applying olive oil before the tar soap shampoo.

If, as in true "idiopathic" premature baldness, that is, baldness from no apparent cause, the scalp is clean, an effort should be made to improve the local circulation, and to loosen the scalp on the skull by massage. Every night hot, wet cloths may be placed on the scalp for five or ten minutes, and then the scalp should be massaged thoroughly in all directions with the finger-tips for another five minutes. When the scalp is warm and tingling as the result of this treatment the following lotion should be well rubbed in with the finger-tips (Jackson) :

#### PILOCARPINE LOTION

R

Pilocarpine hydrochloride .. .. .	20 grains
Eau de Cologne .. .. .	4 drachms
Rosewater and rectified spirit in equal quantities .. .. .	enough to make 8 ounces

Rub the lotion well in with the finger-tips every night and morning.

To prevent the hair becoming too dry under this treatment, the above lotion may be omitted on one night a week, and a thorough rubbing in of the following sulphur cream may be substituted (Jackson) :

#### SULPHUR CREAM

R

White wax .. .. .	7 drachms
Oil of petrolatum .. .. .	5 ounces
Rosewater .. .. .	2½ ..
Sodium biborate .. .. .	36 grains
Sulphur precipitated.. .. .	6 drachms

Rub the cream well into scalp with the fingers night and morning.

Daily brushing for twenty minutes to half an hour with a not too stiff brush seems to have a valuable tonic effect in the case of excessive falling of the hair in women. Where the scalp is tightly bound down and the local circulation is poor, electrical treatment to the scalp sometimes gives good results.

The general health, if run-down or depressed, always has an adverse effect on the vitality of the hair. Hence moderate outdoor exercise, plenty of ventilation indoors, especially in the bedroom, an abundance of plain, nourishing food, avoidance of over-fatigue (particularly long hours of close, mental work), and freedom from worry and anxiety will all help in the rejuvenation of the hair.

Sometimes, although the patient may not appear markedly anæmic, a simple iron tonic such as the following seems to improve the condition of the hair :

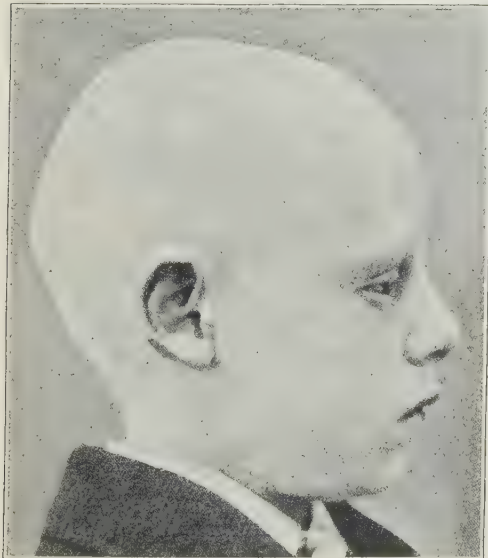
R

Iron and ammonium citrate	..	..	..	2 drachms
Ammonium carbonate	..	..	..	40 grains
Spirits of chloroform	..	..	..	2 drachms
Infusion of quassia	..	..	enough to make	6 ounces

Make into a mixture, and take one tablespoonful three times a day after meals.

In the much more common cases where the baldness is associated with a scurfy condition of the scalp, the sulphur cream mixture prescribed above can be used both for cleansing the scalp and treating the disease causing the scurf at the same time. Using this sulphur cream, Dr. Jackson recommends that for three nights running the hair should be parted in a large number of places on the scalp, and then the sulphur cream should be well rubbed into the scalp itself. It will do no good if simply applied to the hair, and then brushed off again. On the fourth day the scalp should be thoroughly washed with tar soap, and the sulphur cream again applied after thorough rinsing.

For the next seven to ten days the ointment should be used on alternate days, the scalp being thoroughly washed on the intervening days. Then for the next two weeks the cream should be applied three times a week, and the scalp washed only at the end of the two weeks. Finally the ointment or cream should be used twice a week, the washings being given only every two or three weeks. From now on in the intervals between the applications of the cream the pilocarpin lotion prescribed above for idiopathic premature baldness may be rubbed in night and morning.



CONGENITAL BALDNESS

In place of the above treatment the following regime may be tried. (Dr. Freshwater.)

Every evening at the start of the treatment the head should be well shampooed with the following lotion :

℞	Thymol	..	..	..	..	..	4 drachms
	Green soap	..	..	..	..	..	6 "
	Rectified spirits of wine	..	..	..	..	..	6 "

Pour a teaspoonful into the hollow of the hand. Rub this thoroughly on the scalp, and allow to remain for a few minutes. Repeat process, using a tablespoonful of lukewarm water. A good lather will be produced.

After allowing this to remain on the scalp for some minutes rinse thoroughly with plenty of warm water. If sufficient water is not used when rinsing the hair may feel unpleasantly sticky afterwards.

A cheaper prescription than the above which gives practically as good results is the following (Guthrie) :

℞	Compound tincture of lavender	..	..	..	3 drachms
	Green soap	..	..	..	3 ounces
	Methylated spirits	..	..	..	3 "

The scalp should be first wetted with warm water, and then a little of the soap spirit lotion should be poured into the palm of the hand, and rubbed in thoroughly, until a good lather is produced.

After the hair has been thoroughly dried partings should be made through it with a comb, and a little of the following ointment should be well rubbed into the scalp along these partings, so that its whole surface is reached by the remedy.

℞	Salicylic acid	..	..	..	..	20 grains
	Precipitated sulphur	..	..	..	..	1 drachm
	Oil of roses	..	..	..	..	2 minims
	Benzoated lard	..	..	..	..	1 ounce

Rub into scalp thoroughly, as directed above.

In the case of women with falling hair shampooing the head, as above, may not have to be done more often than twice a week, but the rubbing in of the ointment must be carried out faithfully every day.

The frequent washings of the hair will, in most cases, lead to a temporarily increased falling of the hair, but these hairs are simply loose ones, of low vitality, which have to be got rid of in any case before vigorous normal hairs can take their place. The temporarily greater loss of hair, therefore, should not induce the patient to give up the treatment.

After a month of this regime the patient enters on the second stage of treatment, the drugs used now varying in accordance with the dryness or greasiness of the hair and scalp.

**Greasy Type.** Here the following lotion, which will remove the grease, and at the same time attack the bacteria which causes the scurf, is more suitable than an ointment :

℞	Salicylic acid	..	..	..	..	40 grains
	Perchloride of mercury	..	..	..	..	2 "
	Spirits of lavender	..	..	..	..	1½ ounces
	Rectified spirits of wine	..	..	..	..	4 "

Rub carefully on scalp once or twice daily.



During the month or two this lotion is being used the head should be shampooed once a week with the thymol or soap spirit lotion given above. If at the end of this two months the disease seems to be well under control (or after a third month, if it seems necessary), a change may be made to the following lotion which may be continued indefinitely as a daily dressing for the hair :

℞

Pilocarpin hydrochloride	..	..	..	..	56 grains
Resorcin	..	..	..	..	96
Oil of lavender	..	..	..	..	24 minims
Rectified spirits of wine	..	..	..	..	to make 8 ounces

Apply daily to scalp and hair.

*Note.* Resorcin discolours light yellow or white hair, therefore the above lotion is not suitable for people with fair hair, unless the resorcin is left out.

If found too drying for the hair, Dr. Freshwater recommends the following lotion to be used in place of the above :

℞

Pilocarpin hydrochloride,	40	grains
Resorcin	..	80 grains
Castor oil	..	160 minims
Oil of lavender	..	80 "
Rectified spirits of wine	enough	to make 8 ounces

Apply daily to scalp and hair.

Here, again, in making up the prescription the resorcin should be left out if the patient has fair hair.

In the **dry type**, in which the hair is deficient in natural oil, the dandruff, instead of being greasy, yellowish, and abundant, may be dry and in fine, whitish or yellowish flakes, which cling close to the scalp. Here a tar soap shampoo twice a week and the daily use of a sulphur ointment, such as the following, is recommended :

℞

Precipitated sulphur	..	..	..	..	1 drachm
Salicylic acid	..	..	..	..	20 grains
Oil of lavender	..	..	..	..	10 minims
Lanoline	..	..	..	..	2 ounces

Rub the ointment well into the scalp morning and night until all tendency to scurf has disappeared.

While as the general rule an ointment gives better results in these cases



BALDNESS AFTER DISEASE

than a lotion, and should therefore be persisted in, even at some inconvenience on the patient's part, the following lotion may be recommended :

℞

Precipitated sulphur	..	..	..	..	4 $\frac{1}{2}$ drachms
Glycerin	..	..	..	..	2 $\frac{1}{2}$ "
Water	..	..	..	..	4 ounces

Rub the lotion well into scalp night and morning.

For a dark-haired person, particularly a man in whom the slight discolouring effect of resorcin and oil of cade is of no account, the following ointment will often be found very efficacious :

℞

Resorcin	..	..	..	..	20 grains
Salicylic acid	..	..	..	..	15 "
Oil of cade	..	..	..	..	$\frac{1}{2}$ ounce
Lanoline	..	..	..	..	2 ounces
Vaseline	..	..	..	..	6 "

Rub well into scalp night and morning, until all tendency to scurf has disappeared.

When this stage in the cure has been completed (perhaps after eight to twelve weeks), and the scalp is now free from scurf, the following jaborandi lotion may be used (Grimshaw) :

℞

Vinegar of cantharides	..	..	..	..	2 drachms
Tincture of jaborandi	..	..	..	..	2 "
Glycerin	..	..	..	..	1 drachm
Spirit of rosemary	..	..	..	..	to make 4 ounces

Rub lotion well into the scalp and hair roots nightly.

In case the cantharides in the above lotion comes to have an irritating effect on the scalp after some weeks of use, the following lotion may be used as a daily hair dressing in its place :

℞

Pilocarpin hydrochloride	..	..	..	..	48 grains
Oil of lavender	..	..	..	..	30 minims
Castor oil	..	..	..	..	2 drachms
Rectified spirits of wine	..	..	..	..	to make 8 ounces

Apply the lotion daily as a hair dressing and general tonic to the scalp.

**Syphilitic Baldness.** This variety of premature baldness is readily recognised in most cases by the patchy, "moth-eaten" appearance of the whole head of hair. Sometimes the subject looks as if his hair had been cut by a very unskilled barber using very dull scissors. Not infrequently the eyebrows are attacked, the hair falling away in little patches throughout their length.

The fall may commence within a few weeks of the appearance of the primary sore, when it usually takes the form of a general thinning. The more typical moth-eaten patchy appearance usually develops later on in the disease.

Unless the hair roots have been destroyed by ulceration of the scalp (which sometimes takes place in the tertiary stages of the disease), a complete cure can be looked for without local treatment, if the disease causing the hair symptoms (the syphilis) is suitably treated.

**Baldness following Acute Fevers.** Frequently during convalescence from typhoid or severe measles or scarlet fever, there may be a sudden and pronounced falling of the hair. The accepted theory of the cause here is that some poison circulating in the blood during the height of the fever has destroyed the vitality of the hair roots, the hairs afterwards falling. In long standing chronic diseases where the system becomes profoundly run-down, as in advanced anæmia, syphilis, consumption, or diabetes, thinning of the hair may occur.

The outlook is most hopeful in these cases. It is quite unnecessary to shave the head, as without any local treatment whatsoever new and vigorous hairs within a few months' time will take the place of those destroyed during the height of the fever, or during the generally rundown condition of the body.

**Baldness due to Destruction of Hair Roots following Ulceration of Eczema, Impetigo, Lupus,** and similar diseases attacking the scalp.

If the hair roots are once destroyed, no treatment can bring them back to life again, hence this type of baldness is totally incurable.

**BALNEOLOGY** (*See* BATHS).

**BALSAMS** are resinous bodies with an admixture of benzoic or cinnamic acids. Those commonly employed are balsam of Peru, balsam of tolu, benzoin, and prepared styrax or storax. Internally they are useful in coughs and bronchitis. Externally benzoin and balsam of Peru form a mild antiseptic and stimulating dressing for cuts and ulcers. Storax and balsam of Peru are used for removal of lice. Internally balsams of tolu and Peru are given in cough mixtures. So also is benzoin in the form of the tincture or the compound tincture (generally known as Friar's Balsam).

**BANDAGES.** Everyone should have a working knowledge of simple bandaging, for the manner in which bandages are applied may make all the difference between comparative comfort and nerve-racking pain in a great many simple ailments. The bandages which ought to be kept in every household are best made of unglazed coarse calico. Five or six yards in length, the most useful width is about two or three inches. If a narrower bandage is needed one of these can readily be torn to the required width.

In preparing bandages the first essential is that they should be firmly and evenly rolled. It is impossible to apply a proper bandage when the roll used is loose and uneven.

The cardinal rule in bandaging is that the outer side of the bandage—that is, the surface of the calico which is furthest from the centre of the roll, should be laid against the skin. A much firmer and neater bandage can be applied in this way. It is also generally advisable to bandage from the inner side to the outer side of the limb.

The commonest types of bandages are the "spiral" and the "figure of eight." Using the spiral the limb is simply covered with a series of turns,

each one overlapping the preceding one, for a certain portion of its width. If the limbs were of the same diameter all the way up, a simple spiral would fit any part. In practice, on account of the various changes in size, the spiral bandage has to be folded on itself to prevent wrinkling and to ensure a snug fitting to the limb. A finger of the free hand may be laid on the top of the bandage at the point where the turn must be made, and then by inverting the roll in the bandaging hand the bandage may be made to fit close to the limb. The "figure of eight" bandage is formed without any turns, and will be described under leg bandages below. The "spiral" and the "figure of eight" are constantly used in conjunction in bandaging, alternating from one to the other.

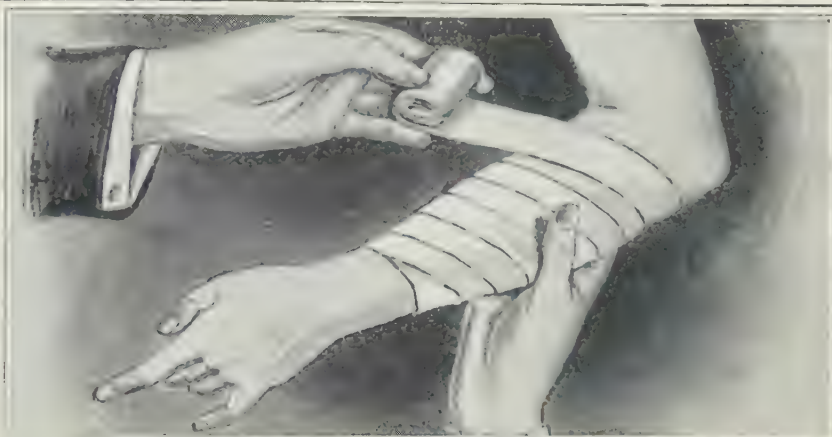
**Foot and Leg Bandage.** Laying the free end of the bandage on the back of the foot, the roll is carried around the outer surface of the foot across the sole, up over the inner border of the foot across the instep, round the back of the ankle, and again over the instep. This figure of eight is repeated, each layer of bandage overlapping the one below by half its width, until the ankle has been passed, and then commencing from the ankle, spiral turns may be used. At the knee a return to the "figure of eight" may be made.

**To Bandage the Groin.** With the patient standing in front of him, the operator places the end of the bandage pointing downwards and inwards along the line of the groin. Having the patient hold it in position here, he carries the roll from within outwards up over the crest of the hip-bone on the side to be bandaged, around the back, over the other hip-bone, across the front of the abdomen, and over the free end of the bandage. It is then carried around the front, outside, and back of the thigh of the affected side, up again through the crotch, and over the crest of the hip on the affected side, and so on. Each layer should overlap about two-thirds of the layer it covers. This bandage is most useful in holding in place any groin dressings (such as for buboes), the pressure on the part varying with the tightness of the bandage.

The double groin bandage or "double spica" is begun in the same way as the single bandage. For example, begin as if the right groin alone was to be bandaged. The first time that the roll is brought forward over the left crest of the left hip instead of passing over and around the outer surface of the right thigh it is carried between the legs, around the back and outer surfaces of the left thigh, over across the front of the lower part of the abdomen around the right side of the pelvis, across the back from right to left, and forward again along the crest of the left hip. On again being brought forward, it this time passes, not between the legs but over the front of the right thigh, around to the back again, forward between the legs, and up along the right groin again. A series of these turns may be used to cover the whole groin and the lower abdomen.

**The Breast Bandage.** To bandage the left breast the operator stands in front of the patient, and, after taking one or two turns from right to left





THE SIMPLE SPIRAL BANDAGE



THE REVERSED SPIRAL, OR "FIGURE OF EIGHT" BANDAGE



THE DOUBLE REVERSED SPIRAL BANDAGE

THE PRINCIPAL TYPES OF BANDAGINGS

around the waist just below the breast to fix the end, he lifts the breast with one hand and then brings the bandage around it from behind forward, carrying the bandage over the opposite shoulder. Then across the back under the armpit, once again around the waist, and then the second turn is again carried up under the breast, supporting it and overlapping the first layer. These alternating, overlapping turns, one around the waist and the next under the breast and over the sound shoulder, are repeated until the breast is covered almost to the nipple, and held firmly in position.

**Double Breast Bandage.** Standing as before the operator takes one or two turns around the body, crossing the abdomen from the left side to the right, and then takes the third or fourth turn from behind forward around the left breast, lifting it upwards. Passing the roll over the right shoulder, across the back, and under the left armpit, again he takes one turn around the waist. Another half turn brings the roll under the right armpit when it is carried up across the back to the left shoulder, across this, down across the chest under the edge of the right breast, lifting this up, and thence round across the back to the left side again. The second turn is but a repetition of the first, the folds supporting the left breast being applied as the roll is brought *upwards* towards the right shoulder, and the corresponding fold supporting the right breast being applied as the roll, coming forward over the left shoulder and crossing the front of the chest, is carried downward to pass backwards under the right arm.

**Head Bandages.** The best head bandage, if no pins are to be used, is the double roller "capelline." This latter is simply a long single bandage, the two ends of which have been rolled up in contrary directions until the rolls



A BANDAGING CLASS FOR NURSES AT THE LONDON HOSPITAL

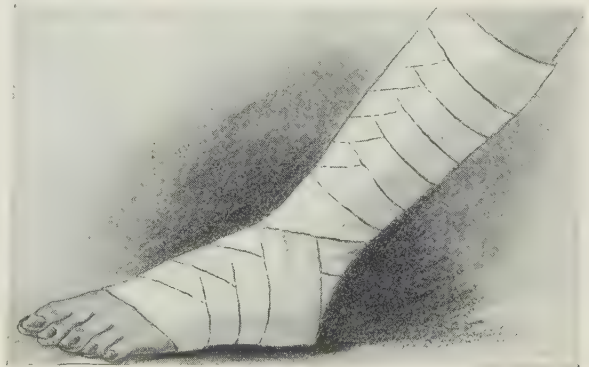


THE GROIN BANDAGE  
See page 182.

bandage is folded over this and carried forward over the top of the patient's head until below the level of the brow. The original left-hand bandage, now in the operator's right hand, is continued horizontally around the right side of the patient's head to the forehead, where it crosses over the top of the bandage which has been brought forward over the centre of the head, and is continued around to the back again. As soon as it has covered

meet. If the rolls are of the same size, one should be unrolled about a couple of feet, the slack being taken up by rolling up the other bandage until the two rolls again lie side by side.

The capelline is applied by the surgeon standing behind the seated patient. Taking the large roll in his left hand and the small roll in his right, he first applies the portion of the bandage connecting the two rolls horizontally across the patient's forehead, almost covering his eyes: It is important that the beginning fold of the bandage be low enough on the brow. The two rolls are then brought round, one on each side of the head just above the ears, until they meet well below the prominent back of the head. The left-hand roll is now brought over the top of the right-hand roll, the operator taking it in his right hand while the other



THE FOOT AND LEG BANDAGE  
See page 182.



over the fold crossing the forehead vertically downwards, this latter is brought upwards, and carried back again over the top of the skull, a little to the left of and overlapping the first strand brought forward. Reaching the back of the head, it is again tied down by being crossed by the horizontal roller, and then is brought forward to the forehead again, this time overlapping the central vertical bandage a little on the right side. The process is continued until the whole scalp is covered, each horizontal layer serving, both at the back of the head and at the forehead, as a fixation point for the overlapping vertical bandages. When enough backward and forward turns have been taken to cover the dome of the head thoroughly, a few extra horizontal turns may be taken to keep the head-dress in place.

**The "T" Bandage** is useful for keeping in place dressings after operations on the genital organs or rectum. The simplest form is a wide bandage long enough to fasten round the waist; at the central point of this at the back another broad bandage is attached. The free end (which may be split into two) is brought forward between the legs, holding in place dressings, etc., and tying to the horizontal portion of the bandage on the front of the abdomen.

**Suspensory Bandage.** For acute inflammations or swellings of the testicle, as after a blow, or in mumps or other disease, an improvised suspensory bandage made from a large soft silk or linen handkerchief is much more suitable than the ordinary woven bandage that chemists supply. Fold the handkerchief into a triangle and tie the two ends of the "base" to the back part of a horizontal belt or bandage going round the waist. The "apex" or point of the triangle is then brought forward between the legs, making a support for the scrotum, and fastening to the horizontal bandage over the abdomen.

**Finger Bandage.** Using an inch-wide bandage, take a couple of turns around the wrist, not covering the free end of the bandage, but leaving this loose for tying later. Carry the roll from the inside of the hand over the back of the wrist outwards. After it is firm at the wrist, bring it down across the back of the finger to be bandaged and then make a series of spiral loops, the one overlapping the other, downwards to the tip of the finger, and back again to the root of the finger, thence crossing over the base of the finger and over the back of the hand to circle the wrist in the opposite direction to the point where the end can be tied into a knot with the free end of the bandage.

In bandaging all the fingers, the roll is first carried round the wrist, and then the little finger is covered with overlapping spirals as above; then across the back of the hand and around the wrist for another turn, thence back across the back of the hand to the fourth finger. When this is bandaged, another turn is taken around the wrist and thence back to the middle finger. The process is continued until all four fingers and the thumb are covered.

**Thumb Bandage.** Begin by fixing the bandage with a couple of turns around the wrist, carrying the bandage from the thumb side over the wrist,





THE SINGLE BREAST BANDAGE



THE DOUBLE BREAST BANDAGE



THE HEAD BANDAGE BEGUN



THE HEAD BANDAGE FINISHED

and leaving a free end of five or six inches. After the second turn, bring the bandage down as far as the end joint of the thumb, and make a loop around the thumb here by carrying the roll around the thumb from without inwards, crossing over the back of the thumb and the back of the hand from thumb side to little finger side as the hand is held palm downwards. The roll is again carried round the wrist, and a second loop is made around the thumb as before, this loop overlapping the former and not extending so far down as the first. The loops are continued until the thumb is covered with the bandage from the end joint well up to the wrist, when the bandage is finished off by tying with the free end around the wrist.

**Hand and Arm Bandage.** With the hand and arm palm downwards, extended towards the operator, the bandage is laid across the back of the wrist, the free end towards the patient's body, and kept in position by the operator's left hand. The roll is then carried across the back of the hand from thumb side to little finger side, around the outer side, across under the palm, up through the angle between the thumb and first finger over the back of the hand, around the wrist and again over the back of the hand from the thumb side towards the little finger side.

These figure of eight loops are continued, each one overlapping the former and slightly higher up the arm, until the wrist is reached, when they may be continued by circular spirals about the wrist. These may be continued up the arm, or each spiral may be made with a turn so as to make the bandage accommodate itself better to the shape of the arm. At the elbow a return may be made to the figure of eight turns, similar to those used in the thumb bandage described above.

**Neck Bandage.** Much of the patient's comfort after any operation on the neck, such as the removal of tubercular glands, depends on the fitting of his bandages. Standing in front of the patient, the operator should lay the free end of his bandage on the front of the shoulder of the injured side, pointing upwards. Holding the end in position with one hand, the roll is carried down across the front of shoulder, under the armpit, over the back of the shoulder, around over the injured part, past the front of the neck (from the injured side to the sound side), and across the back of the neck (from the sound side to the injured side). Thence the roll passes again over the injury, from behind forwards, and thence under the armpit as before, forming a second loop. These loops may be continued until the shoulder and base of the neck have been covered. Then a couple of plain spirals may be taken round the neck, completely covering it. To finish off the bandage, the next turn or two may be taken round the head itself, running up past the ear of the sound side, across the skull, and down over the ear on the injured side. The free end may here be fixed with a safety pin, and additional safety pins may be placed, where necessary, to prevent slipping.

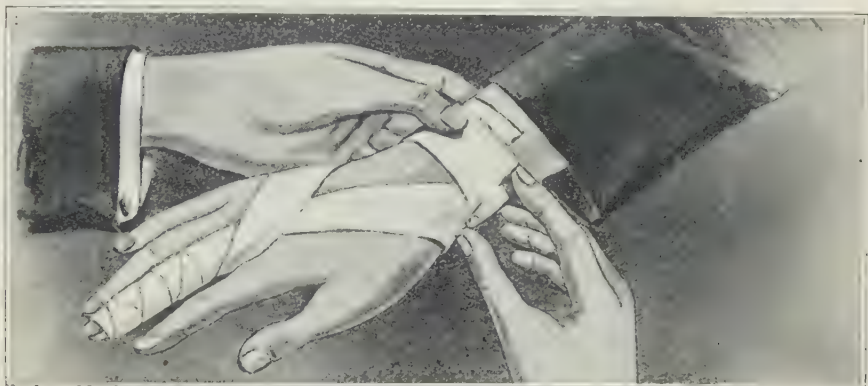


THE NECK BANDAGE

The arrows show the direction in which the bandage is laid on; the white arrow indicates the supposed wound.



THE HAND AND ARM BANDAGE



BANDAGE FOR SECOND OR OTHER FINGER



THE BANDAGE FOR AN INJURED THUMB

BANDAGES FOR THE NECK AND HAND



**BANTING'S SYSTEM.** A system of dieting introduced by Mr. William Banting for the cure of corpulence. Mr. Banting was himself so fat that he could not tie his shoes, and having tried every well-known method of reducing obesity without benefit, he consulted Dr. Harvey, a London aurist, who advised him to avoid the use of potatoes, bread, milk, butter, and sugar, and to adopt the following dietary :

**Breakfast.** One ounce of toast or biscuit ; four ounces of beef, mutton, kidneys; fish, or any cold meat except pork ; a cup of tea without milk or sugar.

**Dinner.** Five or six ounces of any lean meat, fish, poultry, or game ; one ounce of dry toast ; any vegetables except potatoes ; some stewed fruit ; two glasses of Madeira, sherry, or claret.

**Tea.** Two rusks ; two ounces of fruit ; a cup of tea without milk or sugar.

**Supper.** Four ounces of lean meat or fish, and one or two glasses of claret.

Banting lost more than forty pounds of weight in a few months on this diet, his general health also markedly improving. The essential feature of the diet is that it consists very largely of proteid material, with a minimum of carbohydrates and fats. In consequence a severe strain is thrown on the kidneys. This or any diet system which increases the proportion of meat in the food should not be adopted without medical advice. Danger to the kidneys is especially great in middle-aged and elderly people.

**BARBER'S RASH OR SYCOSIS** is a chronic inflammatory disease of the hair bulbs of the bearded region. The chief symptoms are angry red blotches and pimples, appearing in crops, along the line of the jaw and on the upper lip. [See Plate.]

The disease begins by the formation of small red pimples amongst the hairs of the beard or moustache. These pimples, which contain a yellowish fluid, sometimes break and discharge, but more commonly dry into crusts. There may be a considerable amount of itching, burning and pain. A hair may be noticed in the centre of each pimple. The disease is generally caused by microbes from the barber's razor or brush attacking the roots of the hairs.

**Treatment.** The first step in treatment is the close clipping of the whole beard and moustache with scissors. Then any of the hairs in the centre of the pimples which will come away easily should be pulled out.

In the acute stages, where there is pain and soreness, sopping the face several times a day with a solution of one teaspoonful of boracic acid to the pint of water will give great relief. Actually to cure the disease a strong germicide ointment must then be applied night and morning until all the germs are destroyed. The following will usually effect a cure, if persisted with :

R

Ammoniated mercury	..	..	..	..	1 part
Benzoated lard	..	..	..	..	24 parts
Make an ointment. Apply nightly and in the morning.					





### BARBER'S RASH

A typical case. The patient's discomfort is increased by the impossibility of shaving during the acute stages of the disease.



Sometimes the sulphur preparations give excellent results in these cases. A good prescription here is the following :

R

Precipitated sulphur	..	..	..	..	45 grains
Lard	..	..	..	..	1 ounce

Make into an ointment. Smear lightly over the diseased parts every night at bedtime, and allow it to remain on till morning.

As a general rule, ten days' or a fortnight's treatment with one or the other of the above ointments will cause the disappearance of the spots and a gradual healing of the irritated surface.

If despite the treatment, new spots appear, a stronger lotion to kill the deeper-lying germs is needed. If sulphur has been used previously, give up all treatment for a week (to allow the sulphur to get out of the skin), and then four or five times a day sop the spots and the whole beard region with a lotion made by adding three grains of bi-chloride of mercury to six ounces of water.

This lotion must be prepared for you by the chemist. Like all other strong antiseptics, it is highly poisonous if drunk, and should be marked "Poison" and kept in some special-shaped bottle, so that it cannot be mistaken for anything else.

In intractable cases which fail to respond to drug treatment the X-rays are well worth a trial. After one or two exposures the

whole diseased area often seems on the high road to immediate and complete recovery. Occasionally, however, relapses occur after this treatment, as, in fact, after any others.

Vaccine treatment, which consists of inoculating the patient with a vaccine prepared from germs collected from the patient's own skin, is highly recommended by Dr. Norman Walker.

The disease is sometimes apparently made worse by the first injection of the vaccine, but this temporary relapse is soon followed by an improvement which is much more thorough than that following X-ray treatment (Norman Walker).

The same authority recommends as most beneficial the administration of cod-liver oil in barber's rash in young men of a delicate constitution. The



BARBER'S RASH ON THE CHEEK

following cod-liver oil mixture will be found more palatable than the plain oil :

R

Cod liver oil .. .. .	4 ounces
Gum acacia in powder .. .. .	6 drachms
Chloroform water .. .. .	4 ounces
Cinnamon water .. .. .	enough to make 16 ounces

Make into a mixture. Take two tablespoonsful three times a day, after meals.

Sometimes the persistence of the ulcerating spots on the face has a depressant effect on the general health, leading to a mild form of debility with anæmia. In these cases the following prescription of cod-liver oil and iron is often of great service :

R

Iron and ammonium citrate .. .. .	3 drachms
Cod liver oil .. .. .	4 ounces
Gum acacia in powder .. .. .	1 ounce
Refined sugar .. .. .	1 "
Chloroform water .. .. .	4 ounces
Cinnamon water .. .. .	to make 16 ounces

Make into a mixture. Take two tablespoonsful three times a day, after meals.

From the commencement of treatment, and until a complete cure is obtained, the patient's shaving brush and razor should be dipped for a moment into boiling water after each time of use. Otherwise re-infection and a new outcrop of spots is very likely to occur.

The ailment is very contagious, so no one should use the patient's razor or shaving brush, his sponge or towel or pillow.

It is all-important that barber's rash should be vigorously treated at once immediately it shows itself. Otherwise deep pitting of the skin and permanent scarring may result, while the cure is certain to be delayed.

**BARLEY WATER.** While of small food-value, barley water is useful for mixing with milk to render it more digestible. On account of its slightly laxative effect, barley water may be added with advantage to the milk of infants of a constipated habit. As barley water contains a small percentage of starch, it should never be used as a milk diluent for infants who have any difficulty in digesting starchy foods. When there is a tendency to diarrhoea barley water may increase this.

**Preparation** of barley water. Mix two heaping teaspoonsful of prepared barley in a cup with two tablespoonsful of cold water. When ground into a paste, put into a saucepan and pour on a pint of boiling water. Boil for three or four minutes, stirring vigorously. Strain and use unflavoured, or add a little lemon or sugar to taste.

**BARRENNESS.** It is estimated that one-tenth of all married women never bear any children. Others have one or two, perhaps, within a few years of marriage, and then, without any apparent cause, cease to bear. The former



case is one of "absolute sterility"; to the latter the name "relative sterility" is given. Another form of "relative sterility" is that in which a young woman is married for several years before having a child.

Many various causes are held responsible for sterility, whether partial or complete. Some causes can be removed and the defect cured, others are not influenced by any known treatment.

**Causes.** In a large majority of childless marriages the defect leading to barrenness is probably to be found in the wife. Certain authorities, in fact, insist that not one out of six cases of childless marriages is due to any abnormality of the husband's.

Impotence and sterility in the male will be dealt with under those headings. Under "barrenness" female sterility alone is referred to.

A word may be said here regarding that curious class of cases in which no sexual defect is present in either party, and yet the marriage remains childless. No explanation can be given. It sometimes happens that a man has several children with one wife; on his first wife's death he marries again, and this marriage proves childless. But on his death the second wife again marries and bears several children. Here it is demonstrated that neither husband nor wife has any defect causative of sterility, and yet for some mysterious reason the marriage remains childless. How much barrenness may be due to this "incompatibility" is unknown, but probably it accounts for a considerable proportion of the childlessness of married people.

Age is one of the chief causes of barrenness of the wife. A woman who marries between the ages of twenty and twenty-five is very likely to have a child within eighteen months. Ninety out of a hundred women marrying at that period of life, in fact, do give birth to a child within two years. Of one hundred women marrying between the ages of twenty-five and thirty, seventy-five have children within two years; but among women who marry between forty-five and forty-nine, only four in a hundred have children within two years.

Among the causes that sometimes produce barrenness are some that the patient herself can remove.

Intemperance, for instance, is known so to affect some part of the generative system as to lessen the likelihood of conception. The remedy in such cases is to give up the use of alcohol completely.

Excessive corpulence is another not uncommon cause. Probably in some cases women put on fat because they are childless, but in other cases their childlessness is traceable to the obesity. This form of sterility may be, and has been, cured by a reduction of weight. Abundant exercise and restriction of diet—especially in the starchy, fatty, and sugary elements—may help.

Apart from corpulence, over-eating is sometimes a cause of childlessness. The remedy in this case is obvious. On the other hand, insufficiency of food

may render a woman sterile ; so may serious disorders of the digestive system or wasting diseases in which the patient becomes ill-nourished. Anæmia of an extreme degree is also a cause of childlessness. In this last case the patient should have medical advice. (*See ANÆMIA.*)

Sometimes the temporary separation of husband and wife effects a cure of the barrenness. On the other hand, there is no doubt that sterility of the female is occasionally due to absence of sexual feeling. In some cases this defect is due to painful menstruation, and when a cure of the latter is effected the normal sexual feelings appear and conception often follows.

Spasmodic dysmenorrhœa (a form of painful menstruation) is often accompanied by sterility. If the patient should chance to become pregnant, the dysmenorrhœa will probably be cured. But, as is stated in the article on dysmenorrhœa, this affection interferes with conception, not only directly, but indirectly by destroying the normal sexual feeling, and usually by giving rise to pain more or less severe. Other forms of painful menstruation, apart from the spasmodic variety, do not seem to produce sterility.

Sterility, according to Dr. Marion Sims, may be caused by leucorrhœa or any abnormal condition of the natural fluids of the vagina. Any such condition should therefore be remedied by injections and other appropriate medical treatment. Other causes are the absence or very small size of the ovaries (absence of these bodies is, however, extremely rare), and certain malformations of the womb. Chronic inflammation of the womb and fibroid tumours may also be a cause of barrenness. The vagina may be imperfectly developed so that conception is prevented or its chances greatly reduced. In many cases this defect can be completely cured by operation.

Vaginismus may cause sterility. This is a nervous affection causing intense pain, with spasmodic closure of the vagina. Vaginismus is a very intractable ailment, though many cases can be cured, or the painful sensitiveness can at least be temporarily diminished by the use of a pessary made up of two grains of eucaine lactate mixed with two drachms of theobroma ointment. The pessary is inserted in the vagina and allowed to dissolve. (Herman.)

In some diseases, such as typhoid fever, bleeding into the substance of the ovaries may occur. The occasional consequence is destruction of the ovum-forming tissues, sterility resulting.

In any case of prolonged barrenness there is always a chance that the patient may conceive even late in life and give birth to a child. A doctor, however, should be consulted, if more than three years elapse from the date of marriage without conception taking place. Often a simple operation may completely remove the sterility.

**BASEDOW'S DISEASE**, another name for exophthalmic goitre, also called Grave's Disease. This is an affection of the thyroid gland in which that organ is enlarged, the eyes are prominent, the pulse rises to about 100

beats per minute, and much higher on slight exertion, the limbs tremble, and sometimes there is pronounced wasting of the muscles. The disease chiefly affects women in the first half of life. (See EXOPHTHALMIC GOITRÉ.)

**BASILIC VEIN**, the vein which runs from the elbow up the inner side of the arm. In blood-letting it is this vein which is generally opened.

**BASILICON OINTMENT**, or resin ointment, is composed of eight parts resin, eight parts yellow beeswax, eight parts olive oil, and six parts lard. It is slightly antiseptic and stimulant, and forms a good application for slow healing sores and ulcers.

**BATHS.** For a warm bath the water should be between 98° F. (about body temperature) and about 106° F. Such a bath induces increased perspiration, and raises the rate of the heart beat. On this latter account



AN EASILY CONTRIVED ARRANGEMENT FOR HOT AIR OR VAPOUR BATHS

people with weak hearts should be careful not to take too warm a bath. As the warm bath opens all the pores of the skin it is usually best to follow it immediately by a cold sponge, and then a brisk rub down with a rough towel, to prevent subsequent chilling or stiffness.

The usual temperature for the *tepid bath* is about 90° F. The *cold bath* varies from anything above freezing point up to ordinary tap temperature.

A cold bath should never be taken when the body is chilled. People with strong, vigorous circulations find that a cold bath taken immediately after jumping out of a warm bed in the morning gives a splendid feeling of exhilaration and health. After the first momentary chilling a feeling of genial warmth comes over the whole body. On the other hand, many people, instead of feeling thus exhilarated and warmed after a cold plunge remain chilly for hours afterwards, with icy fingers and toes, and a tendency to

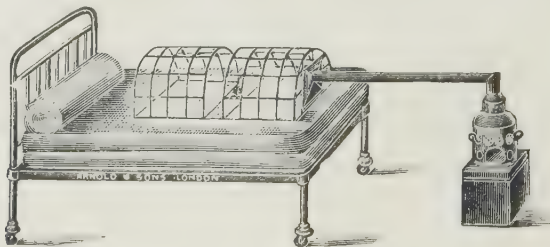
shivering and sneezing. Such persons are said not to "react" properly after the bath, and should in the future substitute a warm or tepid bath for the cold morning tub. The cold bath should never last longer than two minutes, and is not sufficient to keep the body healthily clean, so, in addition, a warm bath, with plenty of soaping, should be taken at least once a week.

**Vapour Baths.** A simple arrangement for taking a hot vapour bath at home is to sit on a wooden chair placed over a large pan containing a few inches of hot water. Blankets should then be draped over the patient, chair, and pan in the form of a tent, the patient's body acting as the tent pole. The nurse should then lift up one corner of the blanket, and gently place in the hot water (by the aid of some fire-tongs) a brick which has been heated in the fire. As the steam from the first brick subsides another may be added, until, after about ten minutes, the patient breaks into a profuse perspiration. Vapour baths are mostly used to increase the skin's action in kidney disease, and to reduce superfluous fat. The patient's heart, however, should be always examined first, as sometimes vapour baths have a very lowering effect.

**The Turkish Bath** is carried out in a number of rooms of different temperature. The temperature may range from about 90° F. in the coolest, to 220°, or even higher in the hottest room.

The safest plan in taking a Turkish bath is to begin with the hottest room, remaining three to five minutes, and then pass to the second room, where the temperature is some 40° lower (perhaps 180° F.). After remaining here five minutes the bather moves to the third hot room, temperature about 120° F.

As a general rule, perspiration begins shortly after entering the hottest room, and continues profuse during the stay in the second and third rooms.



HOT AIR AND VAPOUR BATH

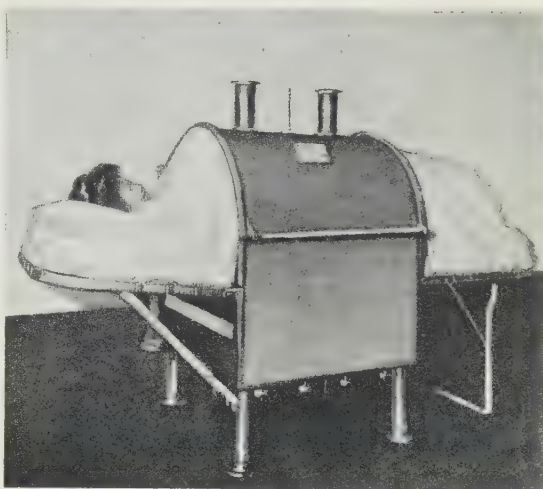
After completing the stay in the third room, the patient undergoes a thorough shampoo in a cooler room still, and then should rest sufficiently long for the skin to resume its normal temperature before leaving the bath.

The greatest precautions should be taken to avoid all exposure on the way home from the bath which may lead to a contraction of a chill or severe cold. As a Turkish bath has a very fatiguing effect on the heart, the prospective



bather should always be thoroughly gone over by a physician before taking a bath of this sort.

**Hot Air Baths** are constantly used in medicine as a means of causing a sluggish skin to perspire freely. In threatened uræmia, and other conditions where it is all-important to cause the skin to act freely without loss of time, a hot air bath is an invaluable remedy. In chronic rheumatic conditions, with great stiffness and distortion of the joints, in sciatica, and in intractable cases of neuritis dry hot air baths of a very high temperature sometimes give immediate relief.



DRY HOT AIR BATH FOR THE BODY

These baths are lined with material that protects the skin from direct heat contact, and the great dryness of the heated air enables patients to withstand high temperatures without pain.

The hot air bath when given to stimulate the action of the skin gland in kidney disease needs no special apparatus other than a large spirit lamp with a metal funnel which can carry the hot air into a framework cage, which is placed over the patient while lying wrapped in a blanket on his bed. The patient should be lying on a blanket spread over a waterproof sheet, and similar waterproof sheets, or several thicknesses of blanket should be draped over the cage or framework, and closely tucked in about the patient's neck, so as to keep the hot air from escaping.

The patient may remain exposed to the hot air for half an hour or longer, unless profuse perspiration is induced sooner. After the bath, he should be quickly dried, rolled in a soft, not too heavy blanket, and put back to bed. Sometimes a hot air bath of this sort has a slight depressant effect on the heart, so careful watch should be kept of the pulse, and if there are any signs of this flagging a teaspoonful of sal volatile in a little water may be given.

For the hot air treatment of chronic rheumatism, sciatica, neuritis, etc., special varieties of apparatus, consisting of metal chambers in which the part to be treated can be enclosed, are required. These consist of metal chambers, varying in size in accordance with the parts of the body they are intended to enclose.

The interior of a hot air bath cabinet is lined with asbestos, and that part of the patient's skin which comes in contact with the edge of the opening, or which lies on one of the asbestos supports within the bath is covered with cotton-wool. The tips of the fingers and the nails are also protected by cotton-wool bandages, on account of their great susceptibility to heat.

The heat is supplied by electrical resistances, and it is on account of the great dryness thus obtained that the patients can withstand temperatures of 200° F. to 230° F. without pain.

The baking in a hot air bath of this sort of joints rendered stiff and helpless by recurrent attacks of chronic rheumatism sometimes has a most astonishing effect. Most of the stiffness, and all of the pain, usually pass off for the day, and after several treatments may even gradually disappear entirely. Lumbago has also given excellent results under this treatment.

**Medical Baths.** In pruritus, a general itching of the skin, alkaline baths, made by adding four tablespoonsful of washing soda to twelve gallons of tepid water, often give immediate relief. Mud baths are provided at certain health resorts for rheumatism. Mustard baths, made by adding a tablespoonful of mustard to a footbath of very hot water are sometimes used to check oncoming colds, the patient soaks the feet in the water for five minutes, while the rest of the body is enveloped in blankets.

**Baths for Children.** A healthful, vigorously acting skin is a vital necessity to the rapidly growing child. If the skin is neglected skin diseases, which may take months to cure, may develop. As a general rule, infants should have a bath night and morning, and older children a thorough bath once a day. Perspiration is freer in the child than in the adult, and this fact, taken with the greater sensitiveness of the child's skin, has a great deal to do with the ready development of inflammatory skin lesions if cleanliness is neglected.

After the bath, the skin should be thoroughly dried by dabbing, not rubbing, with a soft towel, and a dusting powder of the type prescribed below should be lightly dusted in the folds of the skin about the neck and groin, etc.

R.

Finely powdered talc	..	..	..	..	20	parts
Powdered boracic acid	..	..	..	..	1	"
Powdered starch	..	..	..	..	4	"

Mix well and use as a dusting powder.

**Mustard Baths for Infants.** In collapsed conditions, as in the cold stage of infantile diarrhoea, a hot mustard bath often is a valuable stimulant. The bath water should be brought to the required temperature, 95° to 98° F. by pouring boiling water into the bath, and then adding cold water until the thermometer shows that the desired temperature has been obtained. The mustard, a heaping teaspoonful to each gallon of water used, should be stirred into the bath water, after having first been made into a paste in a cup with a little cold water.

When the mustard paste has been thoroughly dissolved in the bath, the infant should be held in the water so that only the head is exposed. Care should be taken that it does not splash about and get the mustard into its eyes. After two or three minutes, not longer, the child should be hurriedly

but gently, dried and wrapped in several thicknesses of warm blanket, and be put back to bed.

**BATH SALTS** or **BATH CRYSTALS** are usually prepared by scenting with some volatile oil crystals of sodium carbonate.

Added to the bath, they tend to soften the water in addition to scenting it pleasantly.

The following is a simple and cheap prescription for bath crystals :

R

Oil of rose geranium	..	..	..	..	1 drachm
Oil of lavender	..	..	..	..	1 "
Carbonate of soda crystals	..	..	..	..	2 pounds

Mix the oils, and sprinkle over the crystals.

In order to allow the crystals to become thoroughly impregnated with the oils, bath salts should be kept in a tightly sealed bottle for at least two months before use.

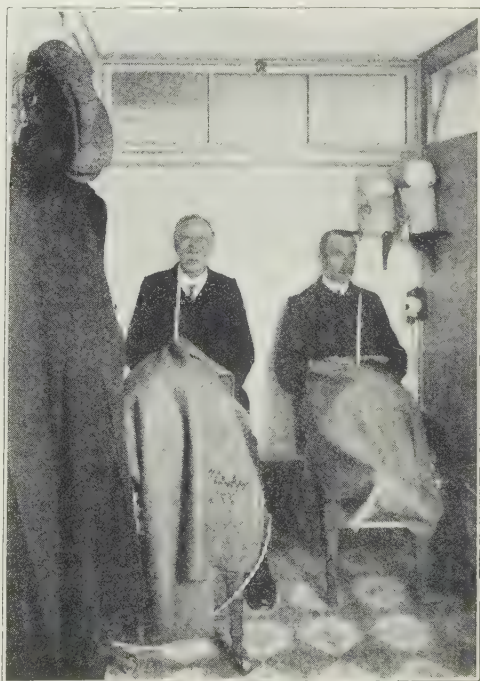
A simple way to make them is to cover the bottom of a wide-mouthed two-pound glass bottle with a two-inch layer of the soda crystals. Over this sprinkle a dozen or so drops of the mixed oils. Shake well and stand by for a day in a cool corner. Next day add another two inches of the soda crystals and another dozen or so drops of the oil and shake well again. Repeat this until the bottle is almost full, and then pour on the remainder of the two drachms of mixed oils. Keep tightly corked for two months before use.

A tablespoonful may be added to a full bath or a teaspoonful to a hand basin.

### BATTLETT'S SOLUTION

is a preparation containing three-quarters of 1 per cent. of morphine. It is frequently used for its sedative effect. The liquid extract of opium of the British Pharmacopœia is an official imitation of Battley's Solution. The dose is five to thirty minims.

**BAY RUM** is made up of oil of myrica acris 16 parts, oil of orange peel 1 part, oil of pimento 1 part, alcohol (94 per cent.) 1,220 parts, and water 750 parts. On account of the rapid



TREATMENT BY BATHS AT THE LONDON HOSPITAL.  
From a photograph lent by the Secretary of the Hospital.

evaporation of the spirit, bay rum dabbed on to the forehead sometimes has a very soothing effect in nervous headaches.

**BED BUGS** are of a brownish colour and from one-twelfth to one-fifth of an inch long. To some the bite causes no trouble ; in others it produces extreme irritation, itching and wheals. Sulphur fumigation destroys the bugs. Wood bedsteads should be well washed with soft soap, after which turpentine should be applied to crevices and joints. For the itching and wheals apply diluted alcohol, diluted toilet vinegar, ammonia, tar and lead lotion, or saturated solution of bicarbonate of soda. The following ammonia lotion often gives immediate relief :

R

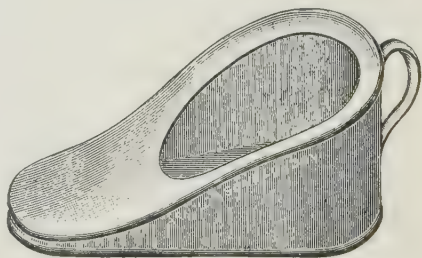
Menthol	..	..	..	..	..	12 grains
Strong solution of ammonia	..	..	..	..	..	3 drachms
Spirits of wine	..	..	..	..	..	2 ounces

Dissolve the menthol in the spirits of wine, and then mix with the ammonia solution. Sop on the bites with a little cotton wool.

**BED-PAN.** This utensil should be in every home. In many cases of even slight illness patients suffer harm from chills, strain of the heart, etc., by getting out of bed. A bed-pan should be used in all cases of weakness and other conditions which make exertion injurious. Before use the bed-pan should be warmed and the margin covered with flannel. After use it should be emptied and cleansed as soon as possible.

**BED-RESTS.** A comfortable bed-rest is a necessity in many cases of illness. A chair placed upside down and covered with a large pillow can be used as a temporary substitute, but where the patient has to look forward to a long convalescence, as after a broken leg, it is usually well worth while to buy one of the many good bed-rests on the market.

In some types of chronic heart disease, where the patient cannot breathe comfortably lying down, an efficient bed rest is an essential for his welfare as well as his comfort.



BED PAN

**BED-SORES** are the result of pressure from the weight of the body constantly falling on bony points not well protected by fat. They are commonest in old, feeble people who have been long confined to their beds with some chronic or wasting disease, especially injuries to the spine.

The prolonged lying in bed in one position necessitated in the treatment of fractured hip in old people is one of the commonest causes of bedsores. The chief sites are the heels, ankles, elbows and the lower part of the back.



Beginning with slight redness of the skin, the affected area soon turns a dusky purple, after which the skin rapidly ulcerates away, leaving an angry sore.

**Treatment.** The sores should be washed daily with tepid water, and then a bandage of sterile gauze dusted with a mixture of equal parts of oxide of zinc and iodoform should be applied. In the early stages, before the central core of the sores has come away, hot boracic fomentations should be applied every two hours, covering them with oiled silk and a bandage to prevent their too rapid cooling. The fomentations are made by wringing out clean napkins

in a very hot solution of boracic acid, a teaspoonful of the acid to the pint of water.

The following is a useful antiseptic lotion for bathing the fully formed bed sore :

R<sub>x</sub>

Borax .. .. .	2 drachms
Sodium bicarbonate .. 2	"
Phenol .. .. .	1 drachm
Rose water enough to make .. .. .	6 ounces

Make into a lotion. Gently bathe the discharging bed sore with a little cotton wool dipped in the lotion.



A CONVENIENT FORM OF BED REST

As, despite all treatment, bedsores are apt to last indefinitely and to cause unlimited discomfort to the sufferer, the risk of their forming should never be lost sight of when nursing an aged, bedridden patient. If possible the patient should be laid upon a water-bed. In this way chafing against hard places in the mattress (the chief source of bedsores) is done away with. In the next place the patient's skin, particularly the surfaces on which pressure falls, must be kept scrupulously dry and clean. A tepid sponge should be given every day, after which there should be a second sponging down with alcohol. After this the back, particularly about the shoulder-blades, small of the back, and the buttocks, should be well dusted with talcum powder.

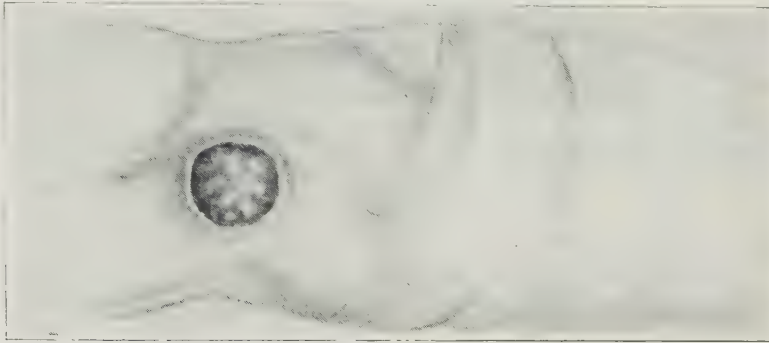
The position in bed should be changed every three hours, unless the patient's state renders even the slightest movement too dangerous. A constant watch should be kept for the first appearance of redness over any prominent bone, and immediately this is noted the patient should be propped up with a cushion in such a way as to take all pressure off the danger area.

**BED WETTING OR ENURESIS.** Frequently young children (and some who have almost reached adult life) are brought to the doctor because of the uncontrollable habit of passing their water when in bed, asleep. Thread worms, with a resulting irritability of the bladder may be the cause. In other cases an over-long foreskin, or too stimulating a diet, with too much liquid at the night meal, may be the sole source of the trouble. Even in these

comparatively simple cases punishing the child rarely is a successful cure; the trouble should be looked on more as a disease than a misdemeanor, and the cause should be found and removed.

The diet should be cut down in amount, and the night meal in particular should be light and easily digestible. No highly spiced foods, or articles such as mustard, pepper, coffee, tea, spices, etc., should be allowed. No fluid of any kind should be taken for some hours before bedtime. Careful note should be taken of the hour at which the accident usually occurs. By waking a child at a little before this hour for several nights running, and making him get up and empty his bladder, the habit may sometimes be broken. In some cases, despite every effort on the part of the patient, the habit continues well on into early adult life.

While the habit of bed-wetting need not be looked upon as anything abnormal up to the end of the third year, its persistence in older children strongly suggests



BED SORE

some general lack of nervous stability. In some instances, in fact, the condition is only a symptom of mental feebleness or of epilepsy.

A not uncommon cause of intractable enuresis in children of from five to ten years of age is the presence of adenoids at the back of the nose. (*See ADENOIDS.*)

In other cases, such serious ailments as stone in the bladder, tubercular disease of the bladder, kidney disease, or diabetes may be at the root of the mischief.

Not uncommonly enuresis is associated with an abnormal acidity of the urine. In these cases cutting down all meats, and keeping the patient largely on a milk and vegetable diet, together with occasional courses of the following mixture, often brings about a complete cure :

R  
 Potassium citrate .. .. . 2 drachms  
 Tincture of hyoscyamus .. .. . 1½ ..  
 Camphor water .. .. . to make 4 ounces  
 Make into a mixture. Give two to four teaspoonsful in a little water  
 three times a day, after meals.

The presence in the bladder of a micro-organism known as the colon bacillus is another not infrequent cause of bed-wetting. Since these bacilli grow only in the presence of acids, treatment should be directed towards rendering the urine alkaline. In these cases Dr. Leonard Guthrie recommends the citrate and acetate of potash, 5 grains of each, to be given every four hours, and the amount of the alkalies increased by 20 grains daily, until 160 to 180 grains are taken in the twenty-four hours. This treatment should be continued for several weeks, otherwise a relapse may occur.

The colon bacillus in these cases reaches the bladder by passing through the intestinal wall into that organ. Constipation, therefore, should be treated with the idea of preventing any undue collections of the germ in the lower bowel. For a child of five suffering from bed-wetting due to bacilli in the urine, the following prescription is recommended (Leonard Guthrie):

℞

Tincture of hyoscyamus	..	..	..	..	40 minims
Citrate of potash	..	..	..	..	1 drachm
Acetate of potash	..	..	..	..	1 "
Urotropine	..	..	..	..	20 grains
Spirit of chloroform	..	..	..	..	12 minims
Infusion of buchu	..	..	..	..	enough to make 2 ounces

Make into a mixture. Give two to four teaspoonsful every four hours.

Belladonna is a drug always worth giving a trial, especially in those cases where there is no local cause, such as a long foreskin, over-acidity of the urine, or bacilli in the bladder, giving rise to the enuresis. The following prescription is suitable for a child of six to ten:

℞

Potassium bromide	..	..	..	..	1½ drachms
Tincture of belladonna	..	..	..	..	2 "
Glycerin	..	..	..	..	6 "
Water	..	..	..	..	enough to make 4 ounces

Make into a mixture. Give one teaspoonful every night at bedtime.

If no good result is seen after the above belladonna mixture has been taken for a fortnight or so, its use should be discontinued.

**BEE STINGS** may sometimes cause severe inflammation, but are rarely dangerous except on the inside of the throat, or on the tongue, when the consequent swelling may prevent the swallowing of food and make breathing difficult. In this case the doctor may have to scarify the swelling. To stings outside the body apply dilute ammonia, soap, chloral, and camphor, or onion juice. (*See under BITES AND STINGS.*)

**BEEF TEA** as ordinarily prepared in the home, contains little of the nutritive material of the beef from which it is made. Certain extractives of a pleasant flavour and a stimulating action on the digestion, and a small amount of valuable mineral salts are, however, preserved in the beef-tea. The chief use, therefore, of this favourite beverage of the sick room is its great stimulating power in fevers and low digestive states, where the idea is to coax

the digestion back into working order, rather than to supply the system with any large bulk of food.

Infinitely more valuable than beef tea as a food is the beef juice obtained by cutting up raw steak into very fine cubes, mixing it with an equal bulk of cold water, and then squeezing out all the juices with a lemon squeezer. As no heat is used none of the valuable proteid elements are rendered difficult of digestion (as happens when meat is boiled), and in addition to the mineral salts and pleasant flavoured extractives, the greater part of the actual nutritive materials of the beef are retained as well.

**BEER** is prepared by a process of fermentation from malted grain, yeast, hops, and water. The percentage of alcohol varies from  $3\frac{1}{2}$  per cent. in light beers, to 5 per cent. in heavy ales. Beer which has not been properly matured by age is very apt to cause intestinal catarrh. Other harmful results from beer drinking are dependent on its contained alcohol. (*See* ALCOHOL, EFFECTS OF.)

**BELCHING.** A common symptom of certain types of dyspepsia or indigestion, belching sometimes occurs in hysteria and neurasthenia, when the digestion is quite normal. In these latter cases the gas is not developed from fermenting food, but consists of air which is gulped down and then belched out again. As the whole of the swallowed air is not got rid of by the belching, the stomach may become painfully distended, causing palpitation and distress. People subject to this affection should make strong efforts to overcome the nervous habit of swallowing air.

The treatment of belching when only a minor symptom of pronounced dyspepsia is included under the treatment of that ailment. (*See* DYSPEPSIA.)

When the belching is perhaps the only sign of mild chronic dyspepsia, the careful avoidance of all very sweet or very starchy foods, such as jams, marmalade, sweets, etc., and pastry, white bread, potatoes, thick soups, etc., and the following mixture taken 1 or 2 hours after meals, may do away entirely with the troublesome habit:

R

Bismuth carbonate .. .. .	4 drachms
Sodium bicarbonate .. .. .	2 "
Spirit of chloroform .. .. .	2 "
Caraway water .. .. .	enough to make 12 ounces

Make into a mixture. Take two tablespoonsful an hour or two after meals when required.

**BELLADONNA.** Both the leaves and the root are used in medicine. (*See also* ATROPINE, *page* 156). The commonest preparations are:

Green extract of belladonna .. ..	$\frac{1}{4}$ to 1 grain
Juice of belladonna .. .. .	5 to 15 minims
Alcoholic extract of belladonna .. ..	$\frac{1}{4}$ to 1 grain
Tincture of belladonna .. .. .	5 to 15 minims

A plaster, a liniment, and an ointment of belladonna are also included in the Pharmacopœia.

Atropine, the alkaloid obtained from the leaves and root of the belladonna



plant, is a colourless crystal. The dose is 1-200th to 1-100th of a grain. Atropine sulphate, grains 1-200th to 1-100th, and the solution of atropine sulphate, dose  $\frac{1}{2}$  to 1 minim, are also much used in medicine.

Belladonna and atropine are used for practically the same purposes in medicine, as their action is identical.

Outwardly the liniment of belladonna often gives good results in neuralgia and chronic inflammation of the joints. The belladonna plaster is often used, applied to the breast, where it is necessary to stop the secretion of milk in a nursing woman. Great care should be taken, however, not to leave the plaster on too long, or severe skin inflammation may result, and internal absorption with poisonous effects. Solutions of belladonna are often added to lotions applied for preventing excessive perspiration of the hands and feet. Its use for this purpose, however, is never to be recommended.

Internally atropine is sometimes given in consumption to check night sweats, and in heart disease when it is desired to make the heart beat more rapidly, and to



BELL'S PALSY OF THE RIGHT SIDE OF THE FACE

On the left the patient is trying to show his teeth ; on the right to raise both eyebrows.

allay pain in the heart region. Belladonna and atropine are sometimes used in whooping cough, asthma, and bronchitis, on account of their power to relax the spasm of the muscular walls of the large air tubes, thus making breathing and expectoration more easy. For belladonna and atropine poisoning *see page 157*.

**BELL'S PALSY, or FACIAL PARALYSIS**, is paralysis of certain of the muscles of the face supplied by the seventh nerve. The paralysis is usually confined to one side, only very rarely affecting both. In many cases it is quite temporary, lasting from a few days to a few weeks. It may, however, persist for some months or years, and occasionally is permanent, especially when due to a blow over the nerve.

**Causes.** Most commonly the affection results from exposure to cold, producing inflammation of the facial nerve. A blow in the region of the ear may cause it. Sometimes Bell's Palsy develops when the nerve has been affected by meningitis, syphilitic gummata, aneurism, tumours, diphtheria, ear disease (a common cause in children), or fracture at the base of the skull.

The palsy may also arise from tumours in the brain, abscess, hæmorrhage, or softening.

**Symptoms.** Some swelling may occur in front of the ear, the part being tender, and there may be more or less pain. Occasionally an eruption of little blisters (herpes) appears, and the patient may sometimes suffer from dizziness.

When the affection is fully developed the eye-lid drops, but the eye cannot be fully closed, the tears flow over, the mouth is more or less helpless, and the patient cannot smoke or whistle at all, or can only do so with difficulty. When he drinks, the lips are not applied close to the glass at one side, and the patient bends his head to the sound side to prevent the liquid running out. When he eats, the food tends to collect between the teeth and the cheek. The lips are drawn to the sound side, and if the tongue is put out it tends to incline to the affected side. This side of the face is immovable, and when laughing, the patient laughs at the sound side only. The skin over the affected area is smooth, while in elderly people the sound side of the face may be wrinkled.

**Treatment.** In the common variety due to cold, the first step in treatment is to open the bowels with one or two grains of calomel taken at night, and followed next morning by a teaspoonful of magnesium sulphate in a wineglass of water. The patient is much better off in bed than up and about. Before going to bed he may be given a hot bath of a temperature of 106° F., and then, if a healthy grown person, may be given two to five grains of Dover's powder and a glass of very hot lemonade to encourage the free action of the skin.

Two to four leeches on the prominence of bone behind the ear are an old-fashioned remedy which still finds favour with some authorities. After the removal of the leeches, pads of heated cotton wool, which should be changed frequently, should be applied over the region. In place of the leeches a small blister may be applied to the same part, and repeated after a day or two. If there is much pain, five to ten grains of phenacetin, or ten grains of aspirin, may be given.

When the inflammation has passed off sufficiently to allow of it, massage and the application of galvanic electricity may hasten the cure. In intractable cases lasting a month or more, daily injections of one-twentieth of a grain of strychnia along the course of the nerve near the point where it emerges from the skull beneath the ear, have been recommended.

Where cold is the cause, the patient should remain indoors for a week or ten days.

If any other cause than cold is operative, it should be appropriately treated. If there is inflammatory disease of the ear, a free outlet for the discharge must be maintained. In syphilis, two grains of Hutchinson's pill may be taken three times a day after meals, together with potassium iodide, in ten to fifteen grain doses three times a day, after meals.

If preferred, the mercury and potassium iodide may be contained in one mixture, as follows :

R

Solution of mercuric chloride	..	..	..	1 ounce
Potassium iodide	..	..	..	3 drachms
Infusion of quassia	..	..	..	8 ounces
Chloroform water	..	enough to make	16	..

Make into a mixture. Take two tablespoonsful three times a day, after meals. After taking the medicine, drink half a glass of plain cold water.

**BELTS.** Abdominal belts are sometimes ordered for elderly, very heavy people who suffer from indigestion caused by an overfat and pendulous abdomen. Here the support obtained from wearing a broad belt or corset to prevent the dragging downwards of the abdomen often gives great relief.

Numerous electrical and magnetic belts are advertised for "bringing back lost vitality and vigour" in certain cases of general debility. As a general rule, these expensive appliances have no effect whatsoever beyond affording the support which could be obtained equally well from an ordinary belt.

The binder, worn after labour, gives great comfort in the same way as the obesity belt described above. The binder should be broad and smooth, easy round the waist, and as tight as possible around the lower portion of the abdomen to prevent the internal organs sagging downward.

**BENZOIC ACID**, prepared from the balsamic resin benzoin, is a powerful antiseptic externally. Internally it is sometimes used as a stimulant expectorant in bronchitis and consumption. It is also very valuable in inflammation of the bladder or kidneys for its acidifying action on alkaline urine. Dose, five to fifteen grains.

**Preparations.** Benzoic acid lozenges, half a grain in each.

Compound tincture of camphor (two grains of benzoic acid in one fluid ounce). Dose, half to one fluid drachm.

Ammoniated tincture of opium (Scotch paregoric), nine grains of benzoic acid to one ounce. Dose, half to one fluid drachm.

**BENZOIN** is a balsamic resin obtained from an Eastern tree. Common preparations are (1) the compound tincture of benzoin (or Friar's Balsam), dose, half to one teaspoonful; (2) benzoic acid, five to fifteen grains; (3) ammonium benzoate, five to fifteen grains. Benzoin is also contained in the compound tincture of camphor and the ammoniated tincture of opium.

Externally, benzoin preparations are sometimes used for their powerful antiseptic action and for their irritant qualities when applied to the skin.

Thus the compound tincture makes an efficient antiseptic dressing for slight cuts or scratches.

Internally, benzoïn compounds are much used in bronchitis and consumption on account of their disinfectant action on the foul material secreted in the lung. For the same purpose, and for its stimulating effect on the walls of the air tubes in the lungs, a teaspoonful of compound tincture of benzoïn (Friar's Balsam) is often added to the water of the bronchitis or pneumonia patient's steam kettle. Benzoate of ammonium is frequently given internally in inflammation of the bladder and kidneys to render the urine more acid, and to prevent its decomposing within the body.

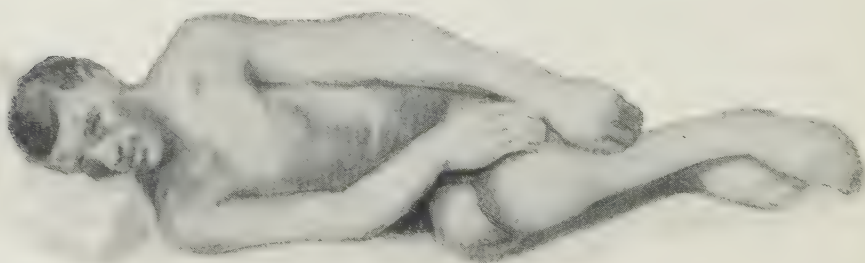
**BENZOL** is a colourless liquid prepared from coal tar oil. Its chief constituent is benzine. Very inflammable and highly volatile, it should never be used for any purpose near any artificial light.

Painted thoroughly over the hairy regions it will destroy pediculi on the body or head, usually after one application.

**BERI-BERI** is a little understood disease of hot countries, the chief characteristic of which is an inflammation of the nerves. Occurring in scattered cases, as well as in epidemics, the disease is found chiefly in Japan and China, the Malay Peninsula, India and Africa. Rarely the disease appears in temperate countries. Mild epidemics have broken out within recent years in the United States and on the Continent.

Two main types of the disease are described (1) the paraplegic or paralytic, and (2) the dropsical.

*Paraplegic type.* Besides great loss of muscular power there may be total absence of sensation of the skin over the front of the legs and the fingers. The legs may be greatly emaciated and the muscles are frequently very tender to the touch. In this type of the disease the patient may be so weak as to be unable to walk or even stand. If he can walk at all, he may stagger in his gait like a drunken man. There is, in advanced cases, nearly always pronounced heart weakness, due to the inflammation spreading to the nerves supplying the heart muscle.



BERI-BERI: THE DROPSICAL TYPE





THE PARALYTIC TYPE OF BERI-BERI, A LITTLE-UNDERSTOOD TROPICAL DISEASE

*The Dropsical type.* Here, instead of being emaciated, the whole body and the limbs are swollen and dropsical. Although the dropsy masks it, the muscles here are greatly wasted, and in advanced cases the patient is too weak to stand on his legs. Apart from these symptoms the patient may feel fairly well.

**Onset of the Disease.** Sometimes vague pains in the legs, shortness of breath, heart palpitation and growing weakness may precede for months the actual wasting and loss of power in the muscles. In other cases, however, dropsy or loss of power may become pronounced in a few days.

The disease is commonest during the hot season. Its chief victims are young adults, although it may attack at any age. Overcrowding, as in gaols,

camps, schools and on shipboard, is thought to be a powerful predisposing cause of beri-beri.

**Cause of Disease.** Authorities still differ as to the cause of beri-beri. The most commonly accepted belief is that it is due to the lack of certain essential elements in the food. Others hold that a specific germ is the cause. The outlook is worse in the dropsical than in the wasting, paralytic type, and the more acute the onset the greater the danger. In various epidemics it is estimated that from 10 to 25 per cent. of those attacked succumb. Death usually results from heart failure, the paralysis so prominent throughout the course of the disease in the limb muscles finally extending to the heart. On account of this ever-present danger of the heart being affected, every case of beri-beri, no matter how mild, should be treated most seriously. Shortness of breath, blueness, pulsating vessels in the neck, and coldness of the hands and feet, as indicating heart weakness, are always grave warnings.

**Treatment.** Early diagnosis is of the greatest importance. If the patient can be removed from the beri-beri district in the early stages and housed in a bright, sunny room situated in some high, dry spot where there are no other cases of the disease, the outlook is greatly improved.

Diet plays an important part in the treatment. The patient should have plenty of milk and eggs, a moderate amount of butcher's meat, no rice, and plenty of fresh vegetables if obtainable. He should be out in the open air and sunshine as much as possible, but should be spared all exertion. The state of the heart should be continuously watched by the physician in charge, and at the first sign of heart failure he should administer proper heart stimulants. Nitro-glycerine, two to four drops of the official 1 per cent. solution, has been recommended should acute heart failure threaten. The dose should be repeated every twenty minutes until the heart quietsens down.

In the dropsical cases the bowels should be kept loose with a moderate dose of salts every morning, and the patient should be allowed only a moderate amount of drinking water during the day. When the patient is well on towards recovery, electricity and massage may be needed to bring the paralysed limb muscles back to health. This treatment, however, must be postponed until the muscular tenderness, so marked in the acute stages of the disease, has entirely passed off.

The necessity for disinfecting bedding and the sickroom, etc., depends entirely on whether or not the disease is considered to be due to a germ or to some missing essential ingredient in the food. However, where the disease breaks out in a crowded community, as in a prison or on shipboard, it is best to be on the safe side, and to disinfect all clothes and bedclothes.

Inhabitants of beri-beri countries should build their houses on the highest and driest sites possible, and should never sleep on the ground floor, as there are strong evidences that dampness from the earth predisposes to the disease.

**BICARBONATE OF SODIUM.** Externally, this salt is much used to relieve itching, the proportion being about a teaspoon (sixty grains) to half a pint of water.

Internally, in doses of five to ten grains, it relieves acidity of the stomach, especially that form which occurs two to three hours after a meal. Ten grains of the bicarbonate of soda with ten grains of carbonate of bismuth in a teaspoonful of mucilage of acacia, forms a good sedative in heartburn and pain in the stomach.

For children, a useful stomachic powder is made with two grains sodium bicarbonate, one grain powdered rhubarb, and a little sugar.

Soda-mint tablets often give relief in acid dyspepsia, but they should not be used to excess. An excellent prescription for "soda-mint" is the following :

R.	Bi-carbonate of soda	..	..	..	..	2 drachms
	" " ammonium	..	..	..	..	3 grains
	Oil of peppermint	..	..	..	..	2 drops
Make into thirty tablets. Take one to three with a little water one half to one hour after meals, when required.						

The official dose of sodium-bicarbonate is five to thirty grains.

**BILE.** The formation of the bile, a thick, greenish brown fluid, is one of the chief duties of the liver. About twenty to thirty ounces are secreted during the twenty-four hours. After the liver cells have made the bile it is collected by a number of little tubes, and either discharged directly into the upper part of the intestine just below the stomach, or else it is stored up in the gall bladder. The chief uses of the bile are to help the system to get rid of various poisonous products constantly being formed within us, to aid in the digestion of fats and to hold in check—by its antiseptic action—the bacteria which swarm in the intestines.

Sometimes the flow of the bile from the liver into the intestine becomes obstructed, and the bile finds its way into the blood. In this case the colouring matter of the bile tinges the tissues a greenish hue, while at the same time the waste matter from the bowel, deprived of its usual colouring matter, becomes chalky coloured. (*See JAUNDICE.*) Again the bile in the gall bladder may form small hard concretions, or gall stones. (*See GALL STONES.*)

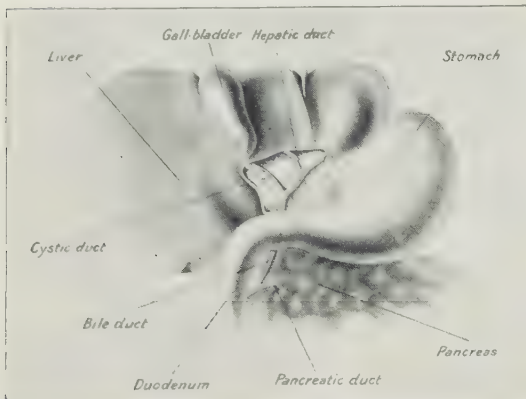
**BILE, PURIFIED,** obtained from the ox and the pig, is sometimes used in medicine because of its power to increase the normal movements of the intestines. It is also considered to aid in digesting fats. Where chronic constipation and the passing of wind in indigestion suggest that the liver is not forming a sufficiency of natural bile, four grain pills of purified ox bile, one or two pills taken twice a day immediately after the midday and the evening meals sometimes give good results.

Purified pig bile, in the same doses and for the same complaints, is by some authorities preferred to the ox bile, as in chemical composition it somewhat more closely resembles human bile than does ox bile.

**BILE-DUCT.** The common bile-duct, a narrow tube about three inches long, carries the bile from the liver and the gall bladder into the small intestine. The bile-duct may be attacked by inflammation, or may be blocked by a gall stone, in either of which conditions jaundice may result.

**BILHARZIA HÆMATOBIA** (Blood Flukes) are very small worms ranging from one-fifth to four-fifths of an inch in length, which enter the blood and are found in the abdominal veins, especially those of the bladder and rectum. Their presence may be the cause of blood in the urine, sometimes of stone in the bladder or kidney, and of clots in the ureter, which may give rise to severe renal colic. The disease is common in Egypt, the Soudan, and parts of South Africa.

The symptoms vary largely in different cases. In some there may be



THE GALL BLADDER AND BILE-DUCT

much pain, in others the patient feels practically well, although the disease may have existed for years. Blood in the urine, in the form of a few drops passed at the end of the flow, is a characteristic symptom. Sometimes the whole of the water passed may be blood-stained. In addition to the blood, the urine, on being allowed to stand in a glass vessel, shows a sediment

which, under the microscope, can be seen to be made up of the ova, or eggs of the worm.

**Prognosis.** While in many cases the amounts of blood and ova passed gradually get less, complete recovery is rare. Sometimes the cystitis, or inflammation of the bladder walls, due to the presence of the worms in the veins of the bladder, may cause the patient constant suffering.

The presence of the ova in the bladder is sometimes the direct cause of the formation of a bladder stone. Again, the bladder inflammation may spread to the prostate gland in men, or to the kidneys. Where the worms and their ova are present in the veins of the lining membrane of the rectum, a condition closely resembling dysentery, with pain, straining at stool and passing of blood and mucus, may be set up.

Although in many cases the disease is quite incurable, persisting for years despite all treatment, it is not often fatal.

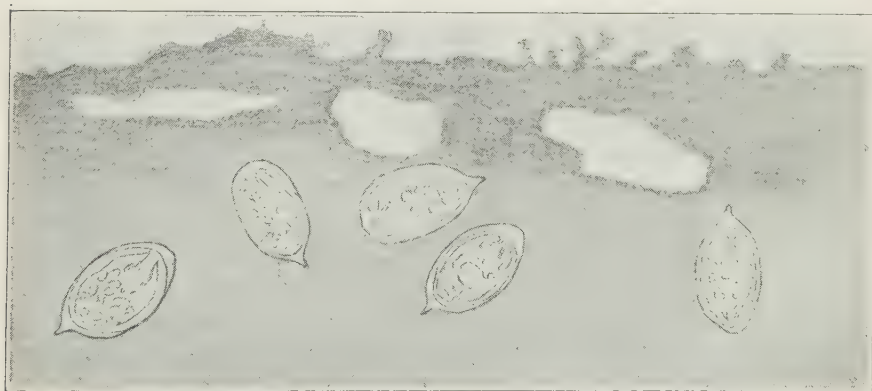


**Treatment.** There is no known means by which the worms can be destroyed once they have established themselves in the sufferer's veins. All that can be done, therefore, is to treat the chronic cystitis—which is practically always present—along the lines adopted in chronic inflammation of the bladder from other causes. (*See under* BLADDER DISEASES.)

Vigorous exercise usually has the effect of increasing the blood in the urine, and so should be avoided. Should a stone develop, or a papilloma or villous tumour (*see* BLADDER DISEASES), these should be removed, if possible, by operation.

**Preventive Measures.** As there are evidences that the eggs of the worm are taken into the system in drinking water, the simplest, and at the same time the most efficacious, preventive is to boil and filter all water drunk when living in those countries in which the disease is prevalent. )

**BILIOUSNESS, OR BILIOUS HEADACHE.** Bilious headache is the direct result of eating too much rich, indigestible food. The acute irritation of the stomach and upper intestine which follows spreads along the bile-duct, preventing the normal amount of bile from mixing in the usual way with the intestinal contents. Deprived of the antiseptic, bactericidal and fat-digesting action of the bile, the intestinal contents undergo decomposition and fermenta-



EGGS OF THE BILHARZIA WORM IN THE WALL OF THE BLADDER

Greatly magnified.

tion, leading to the formation of an excessive amount of food-poisons in the bowel. These poisons, reabsorbed and carried by the blood to the brain, give rise to the typical "bilious" headache or "bilious attack."

**Treatment.** During the attack no food whatever should be taken for twenty-four hours. A large hot-water enema may be given, and if the symptoms have not subsided this may be repeated after some hours. Calomel, which stirs up the bile-forming activity of the liver, should be given—a quarter of one grain every hour during the day until two grains have been

taken. The patient should be kept quiet in bed in a dark room until the attack subsides.

When the attack is in its earliest stages or only threatening the following powder may be the only treatment needed:

R

Powdered sugar	..	..	..	..	..	2 grains
Powdered ginger	..	..	..	..	..	2 "
Powdered jalap	..	..	..	..	..	8 "
Calomel	..	..	..	..	..	2 "

Mix into a powder and take the whole as one dose.

The powder, of course, takes the place of the quarter-grain doses of calomel suggested above.

The following effervescing mixture taken during the attack often has a settling effect on the stomach.

Dissolve twenty grains of potassium bicarbonate in half a glass of water. In a separate glass, in a tablespoonful of water, dissolve fifteen grains of citric acid. Pour the citric solution on to the potassium bicarbonate, and drink while effervescing.

To prevent attacks, anyone predisposed to biliousness should make a point of getting more outdoor exercise, should keep to a simpler diet, give up all alcohol, and pay particular attention to obtaining a regular complete evacuation of the bowels daily.

**BILIOUSNESS, CHRONIC.** In some people biliousness is a chronic complaint in which both the bile and the pancreatic juice are stagnant, and the flow of the former is sometimes temporarily stopped altogether. Describing the typical victim of this affection, Dr. Soltau Fenwick says his temper is a "mixture of irritability and depression." "Pleasures are non-existent, every duty is intolerable, and the sense of ill-health colours his entire mental vision. After a night of disturbed sleep he wakes in the morning with an unpleasant taste in the mouth and a thickly-coated tongue. Giddiness, nausea, palpitation, flatulence, and a sensation of bodily fatigue manifest themselves as soon as he rises from bed, and ineffectual attempts to vomit may recur from time to time.

"Appetite is replaced by a disgust for food, and no amount of fluid appears to cleanse the mouth. The expression is careworn, the eyelids dark and heavy, the hands are clammy, and profuse perspirations are apt to ensue from exertion or excitement."

Other symptoms are headache, spots before the eyes, drowsiness, vertigo, constipation, greasy sallowness of the skin, and impaired power of mental concentration.

Exposure to a cold wind or a draught may bring on a shivering fit, followed by nausea, retching, extreme flatulence, and feverishness. Usually these

symptoms disappear within a couple of days. But the complaint is very chronic, and tends to become worse as time passes.

**Treatment** of chronic biliousness is largely a matter of careful dieting. Dr. Fenwick advises the use of toast, malted and pancreatised foods rather than bread, oatmeal, tapioca, etc., in the ordinary form. Potatoes may be eaten in moderation, at least in the earlier stages. Uncooked vegetables and fruits are to be avoided, as they always produce flatulence. Milk may be consumed to the amount of two or three pints daily. It is best mixed with lime-water. The patient may eat lightly-roasted beef or mutton. Once a day chicken, game, white fish, and sweetbreads may be allowed, as they are usually well digested. As a beverage, coffee with milk or cocoa made from the nibs is recommended. The articles usually to be avoided are veal, pork, and the fat of any meat, alcohol, and tea. In many cases cream, butter, eggs, ham, and bacon do not agree with the patient.

Cod liver oil should be tried when the patient has lost flesh.

It is essential that the bowels be kept regular. For this purpose, if the constant rising of a sour, bitter taste in the mouth suggests abnormal acidity of the stomach, a teaspoonful of sulphate of sodium in a tumbler of hot water may be taken before breakfast.

A weekly dose of two grains of calomel followed by a teaspoonful of Epsom salts next day is of use in relieving nausea and giddiness.

**BILIOUS ATTACKS IN CHILDREN** are, as a rule, simply bouts of acute dyspepsia due to over-eating or the eating of too rich or not quite fresh foods. The only treatment needed is a teaspoonful or so of castor oil and a starvation diet for twelve hours (*See DYSPEPSIA, ACUTE.*)

Sometimes what may be considered to be mild bilious attacks, occurring at intervals of a few months with vomiting and more or less severe abdominal pain lasting for a day or two, may be mild, recurrent appendicitis. The greatest care should be taken here in prescribing purgatives (*see APPENDICITIS IN CHILDREN*), and if there is the slightest abdominal tenderness (particularly over the lower right abdominal area), the physician should be sent for at once.

In some children there is an inherited incapacity of the liver which gives rise to repeated attacks of biliousness on the slightest occasion. These begin about the age of three or four years, and continue to occur at intervals thereafter. A railway journey, a visit to the seaside, fatigue, a fit of anger or grief, "paddling," or exposure to cold wind may, for example, be enough to bring on an attack of biliousness with vomiting.

Most commonly the attack comes on in the morning, the child feeling giddy and faint on rising. Gripping pains may be felt in the stomach, wind is expelled, and then a fit of vomiting brings relief. Sometimes, instead of being vomited, the undigested food is hurried on into the intestine, where

it gives rise to griping pains and the passage of loose motions. The retching and vomiting may be very violent and exhausting, rendering the patient extremely weak and ill. Thirst is generally present, but the appetite disappears altogether during an attack.

As a rule the attack ends within twenty-four hours, when the appetite returns and food can be taken.

**Treatment** consists in putting the patient to bed in a quiet, darkened room, and giving no food whatever. A glass of hot water, or ice sucked at intervals relieves the thirst. As soon as the vomiting ceases give the child two to four grains of grey powder (Fenwick). If the retching is obstinate the following mixture may give relief:

R

Bismuth oxycarbonate	..	..	..	..	20 grains
Sodium bi-carbonate	..	..	..	..	15 "
Mucilage of gum acacia	..	..	..	..	2 drachms
Chloroform water	..	..	..	..	to make 2 ounces

Make into a mixture. Give two to four teaspoonsful, and repeat every two hours till retching ceases.

As soon as the aperient has acted give some light nourishment such as milk and soda-water, iced whey and jellies. Next day plain, ordinary diet may usually be resumed. If, on the other hand, the child is greatly exhausted, a nutrient enema of peptonised milk with a little brandy (*see under treatment of APOPLEXY*) may be preferable to food by the mouth.

**Prevention.** All fatigue and excitement are to be avoided. The bowels must be kept acting regularly every day. Give the meals at regular intervals, remembering that, as a rule, the following articles are usually injurious: eggs, much fat or butter, pork, liver, high game, fat fish such as sardines and mackerel, pastry, beer, spirits, and sweets.

**BINDERS.** *See* BELTS.

**BIRTH.** A normal birth takes place about nine months after conception. Any time between the beginning of the seventh month and full term is commonly accepted as "premature birth." If the birth takes place at any period before that at which the child is capable of surviving—that is, about the sixth to the seventh month—it is known as a miscarriage or abortion. A stillborn child is one born dead. Such a child may have been dead for some weeks previously, or may have lost its life as a result of some difficulties of labour. (*See* CHILD-BIRTH.)

**BIRTHMARKS.** Angiomata, nævi, or "port wine marks" are masses of dilated blood-vessels on the skin, scalp, or lips, etc. They may be very small, pale pink, and only slightly raised above the normal skin level, or they may be widespread, dark purplish masses marked with swollen blood-vessels. Sometimes birthmarks get smaller, or even disappear entirely as the child grows up.



All home treatments for removing birthmarks are most dangerous, as serious bleeding may be set up, and the result is nearly always certain to be an even worse disfigurement. The cause of birthmarks is not known. The old superstitions that they are the results of fright or visions during pregnancy are totally without foundation.

In many cases, much the best policy is to leave a birthmark severely alone, as without treatment of any kind they sometimes tend to decrease in size of themselves. Again, unless operative treatment is carried out by a skilled and fully experienced operator the last condition of the patient may be worse than the first.

On the other hand, when the birthmark is very disfiguring, inflamed, increasing in size, or liable from its position to receive injury which might lead to profuse or even dangerous hæmorrhage, a serious attempt should be made to remove the disfigurement.

The means to be employed depend on the nature of each individual case. For example, a raised birthmark on the scalp of an infant is best removed by a surgical operation, the whole growth being cut away. Into others, bulbous masses on the face or lips, needles may be passed into the growth, being then raised to a great heat by electricity. This operation, which causes the destruction of a portion of the overgrown vessels in the birthmark, may be continued until the disfigurement is greatly lessened. Some birthmarks may be quickly destroyed by the actual cautery. (*See ACTUAL CAUTERY.*)

In suitable cases the carbonic acid snow treatment gives, perhaps, the best results of all. Liquid carbonic acid, contained in large iron cylinders, is allowed to escape into a hollow, rolled-up cone of felt, on the inside of which it deposits as a fine, white intensely cold snow. This snow is then packed into a metal cylinder, and hammered down with a plunger until it is welded into the form of a solid icicle.

The treatment consists of pressing the blunt end of this icicle (held in an applicator to protect the operator's hand) for a few seconds, up to half a minute, against the surface of the birthmark. Although there may be a certain amount of pain at the moment of application, this soon passes off. The tissues, which are actually frozen by the pressure of the carbonic acid snow, are then covered



HAIRY BIRTHMARK  
From a case at Guy's Hospital.

with a sterilised bandage, which may be left on until the resulting scab peels off. In suitable cases, under this treatment, a birthmark can often be completely removed, leaving practically no scar behind. In a large birthmark, several applications of the carbonic snow may be necessary.

**Radium Treatment for Birthmarks.** Birthmarks which involve only the outer layers of the skin can usually be removed with little or no scar by the application of half-strength radium for from ten minutes to half an hour. In more deeply lying birthmarks, more vigorous treatment, *i.e.*, applications of greater strength and of longer duration, lead to the formation of a smooth, supple, whitish scar which in a favourable case may be practically unnoticeable.

In the raised, lumpy, purple-blue types of birthmark (cavernous *nævi*), good results are usually obtained from exposures of twenty minutes to an hour in duration, given daily for three consecutive days. The series of exposures should be repeated after a month's interval. The effect here is to cause the whole mass gradually to shrink in size, thus becoming much less disfiguring, without any new scar or any irritation of the skin resulting.

**BISMUTH.** The carbonate, subnitrate, oxide, and salicylate, all five to twenty grains when taken internally, are used in medicine. Bismuth is also contained in the official solution of bismuth and ammonium citrate; dose, one half to one teaspoonful.

**External Use.** Both as a dusting powder and in ointment form bismuth is sometimes used externally as a mild astringent.

Internally the salts of bismuth, ten to fifteen grains, suspended usually in compound tragacanth powder are much used to soothe stomach pain and to quiet vomiting. Much larger doses may be given to check severe diarrhoea.

In addition to their astringent action the salts, particularly the subnitrate, are considered to have a slight antiseptic action. The stools of a person taking bismuth in large doses may be discoloured almost black. This is due to the action of the sulphur compounds the drug meets in the intestines, and is no contra-indication to its continued use.

**BITES AND STINGS. Dog Bites.** The immediate danger of a dog bite lies in the risk of the wound suppurating from foul material carried into the flesh on the animal's fangs. There is also the danger of hydrophobia developing weeks, or even months afterwards, if the attacking animal *at the time of the biting* was suffering from rabies.

Rabies is a disease among animals (dogs most commonly, and rarely in cats, wolves, and foxes), which speedily results in their paralysis and death. If while suffering from rabies such an animal bites a person it is very likely to pass on to him its disease, which in the human being is known as hydrophobia.

It should be remembered, however, that if the animal is *not* suffering from rabies itself, it *cannot possibly* set up hydrophobia in the human being. After

any dog bite, then, the first step in treatment is to catch the dog, and lock it up in some secure stable or outhouse where it can be kept away from all other animals and people, and yet be under the strictest observation. If the dog does not in the next fortnight present unmistakable signs of madness (restlessness, peculiar-toned whinings, disinclination to drink, convulsions, frothing at the mouth, etc.), his bite cannot possibly have introduced the poison of hydrophobia into the wound. The patient, therefore, need have no further worries on that account.

A bite from any animal should at once be carefully washed with a weak solution of carbolic solution (one part of acid to twenty parts of water), and then dressed

with a loose bandage covered with a thick pad of lint soaked in the same solution, diluted with an equal amount of water, and bandaged on fairly tightly. In from twenty-four hours to a week, depending on the amount of laceration, the wound will be healed.

If during this time the dog has remained perfectly healthy there need be no fear of hydrophobia coming on afterwards. If, however, the dog shows any signs whatsoever of being out of health it is advisable at once to undergo the Pasteur preventive treatment, which is practically always successful in staving off the disease when begun within a fortnight of the patient's being bitten.

**Mosquito or Gnat Bites.** As a preventive for warding off the attacks of these most unpleasant insects the following lotion sometimes is useful :



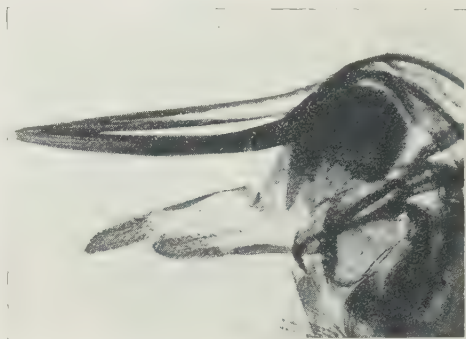
Ward

POISON FANGS OF A SPIDER  
Mouth of common spider showing feeler, poison fangs, and jaws.

Rx

Oil of lavender	..	..	..	..	..	20 minims
Oil of eucalyptus	..	..	..	..	..	2 drachms
Spirit of camphor	..	..	..	..	..	1 ounce
Soap liniment	..	..	..	..	..	1 "

Mix well into a lotion. Apply a little of the lotion to the skin of the hands, wrists, and ankles when the mosquitos are about.



THE STING OF A WASP

Oil of pennyroyal dabbed about the wrists and ankles will also sometimes keep these pests away.

For relieving the irritation strong spirit of ammonia should be applied as soon as possible to the bites. The following insect-bite lotion is a more

pleasant, and at the same time a somewhat more efficient preparation than the ammonia alone :

R

Menthol	..	..	15 grains
Alcohol (90 per cent.)	..	..	1½ ounces
Strong solution of ammonia	..	..	½ "

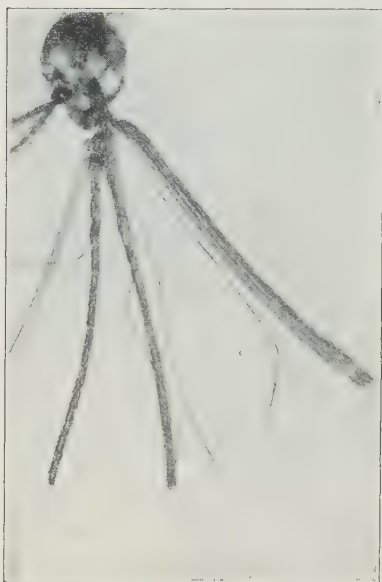
Dissolve the menthol in the alcohol, and then add the ammonia. Dab on to stings and bites as often as required.

To some people the smell of ammonia is almost as objectionable as the bites of the insects. The following lotion, without ammonia, may here be substituted for the ammonia lotion above :

R

Carbolic acid	..	..	10 grains
Iodine	..	..	20 minims
Iodide of potassium	..	..	1 drachm
Rosewater	..	..	2 ounces

Mix into a lotion. Sop on to bites or stings until irritation is soothed.



PROBOSCIS OF THE MOSQUITO

The mouth parts of the mosquito are here shown separated and highly magnified. In the natural state they are closed.

centipedes, etc.), the covering of the wound with a drop of turpentine, or applying strong ammonia is the best means of relieving the pain.

The bite of a poisonous spider should be at once incised with the point of a sharp knife, and then vigorously sucked so that as much of the poison as possible may be drawn out of the wound, and thus prevented from getting into the general circulation. At the same time, a stiff dose of brandy, or other spirit, or a cup or two of very hot black coffee may be given to counteract any shock to the heart. If the patient shows any signs of becoming short of breath vigorous artificial respiration should be resorted to at once. (See ARTIFICIAL RESPIRATION.)

**Snake Bites.** Local treatment consists of isolating the part as quickly as possible from the general circulation by putting a tight cord or rope bandage round the limb just above the bite. Then an incision should be made into the bite with a sharp knife sufficient to cause profuse bleeding, after which the wound should be sucked and then thoroughly mopped out with a strong solution of permanganate of potash, a teaspoonful of the latter to two tablespoonsful of water. Brandy or very hot coffee may be given by the mouth if there is much collapse.

**Spider Bites.** Except in the case of poisonous tropical spiders, (tarantulas,

of poisonous tropical spiders, (tarantulas,







### URTICARIA AFTER WASP STING

Urticaria, or nettle rash, developing all over the body and limbs after the sting of a wasp. From a case at Guy's Hospital.

Numerous anti-toxins have been prepared to counteract the effects of the bites of poisonous snakes in tropical countries. Some of these, undoubtedly, if given promptly, are of great value in saving life, but the above local treatment, which can be carried out immediately after the injury has been received, should never be neglected in favour of an anti-toxin treatment which in the great majority of cases can only be undergone after the poison has been circulating for hours in the system.

**Wasp Stings.** Almost before the first acute

pain from the wound subsides, the part begins to swell. This swelling is confined to the immediate neighbourhood of the point of entrance of the sting in the great majority of cases, but sometimes it is extensive, greatly disfiguring the sufferer.

Ordinarily the system is not appreciably affected by the poison in the sting, but in rare cases, and particularly when the victim has been stung in a number of different places, the poison seems to act directly on the heart, leading to fainting or even fatal heart failure. A wasp sting over a vein, where the poison is poured directly into the blood stream (and so carried straight to the heart), is more likely to be serious than one in which the poison enters solid tissues underlying the skin.

A wasp-sting on the tongue, lips, or inside the cheek may lead to suffocation through rapid swelling of throat tissues, preventing air being drawn into the lungs.

Not infrequently, as the result of the wasp poison in the blood, a type of nettlerash which may persist for several days may break out over the part affected. In some cases this rash may cover the whole body. (See PLATE.)



Snake's head, showing poison fang and bag



THE BEE'S STING

The barbs are withdrawn from the sheath  
Magnified 300 times.

Ward

**Treatment.** The wound should first be carefully examined to see whether the insect's sting has been left behind. If so this should be carefully squeezed out or removed with a needle or a fine pair of tweezers. If the pain and swelling is severe, a handkerchief soaked in lead-water and laudanum lotion may be lightly bandaged over the part, or the old-fashioned "bluebag" may be used. Another homely but efficacious remedy is the rubbing of the sting with strong onion.

**BITTER ALMOND POISONING.** This poison (which is essentially prussic acid), is very rapid in its action. If the patient is seen at once, empty the stomach with a stomach-tube or an emetic such as a tablespoon of mustard in a tumbler of cold water, or tickle the back of the mouth with a feather while waiting for the emetic. Try to stimulate the patient's circulation by dashing cold water on the face and chest, and apply smelling salts to the nose. Give a little whisky or brandy by the mouth if the patient can swallow; otherwise give an enema of whisky, two ounces in four ounces of warm water. If the patient still shows signs of collapse, practise artificial respiration (*which see*) until he begins to breathe freely again or until the doctor arrives.

**BLACK DEATH** is an old name for plague, of which there are three principal varieties, bubonic, pneumonic, and septicæmic. (*See* PLAGUE.)

**BLACK DRAUGHT**, or compound mixture of senna, is an old-fashioned but effective purgative. It is frequently prescribed to be taken in the morning, following up a "blue pill" of the night before. Magnesium sulphate and liquid extract of liquorice are the other purgative ingredients of the black draught. The dose is from two to four tablespoonsful.

The full prescription for the black draught is as follows:

℞					
	Sulphate of magnesium	..	..	..	20 drachms
	Liquid extract of liquorice	..	..	..	4 "
	Aromatic spirit of ammonia	..	..	..	4 "
	Compound tincture of cardamoms		..	..	1 ounce
	Infusion of senna	..	..	..	enough to make 10 ounces
	Make into a mixture. Dose, two to four tablespoonsful.				

**BLACK DROP** is another name for tincture of opium or laudanum.

**BLACKHEADS.** A popular name for the spots of discoloured material which block up the mouths of certain skin glands in acne vulgaris. (*See* ACNE.)

**BLACK MOTIONS** are passed most commonly as a result of bleeding in the stomach or upper part of the intestine, ulcers of the stomach or duodenum being the most frequent cause of the bleeding. On its way downward the blood becomes changed in colour. When bleeding occurs in the large intestine the blood passed is usually of a lighter, more natural colour.

Blackness of the motions may, however, be due to other causes, such as the taking of medicines containing bismuth, iron or charcoal. Sometimes the fæces are very dark in colour from being long retained in severe constipation.



**BLACK VOMIT.** In ulcer or cancer of the stomach or in any condition where blood may be trickling into the stomach occasionally and mixing with the digesting food there may be vomiting of a purplish red or almost black colour. The treatment of this symptom is dealt with under the diseases in which it occurs.

**BLACK WASH.** A mild astringent lotion frequently used as an application for syphilitic sores.

The prescription is as follows :

R	Calomel	..	..	..	..	..	30 grains
	Glycerin	..	..	..	..	..	4 drachms
	Mucilage of tragacanth	..	..	..	..	..	10 "
	Lime water	..	..	..	enough to make	10 ounces	

Make into a lotion and apply externally.

**BLACK WATER FEVER** is a little understood and highly fatal disease of tropical countries, the characteristic symptoms of which are blackish or dark red urine, jaundice, and vomiting fluid of a bilious greeny hue.

The ailment, which is much commonest in people who have suffered from malaria, begins with a severe chill and shaking fit, the temperature running up to 105° or even more. After a time the fever falls as suddenly as it rose, with profuse perspiration. The patient may complain of severe pains in the back and limbs.

The characteristic symptoms of the complaint—violent and continuous vomiting of greenish fluid, pronounced jaundice, and a dark-reddish discolouration of the urine—follow close on the preliminary bout of fever. The patient is completely prostrated, and death may occur from acute stoppage of the flow of urine within twenty-four hours of the onset of the disease. In less acute cases the urine remains, decreased in amount, and showing under the microscope quantities of broken-down blood-cells and blood colouring matter floating in it.

The patient may die from heart exhaustion any time during the first fortnight or so after the onset or, in a favourable case, may gradually recover, the urine day by day increasing in amount with less and less blood showing, until finally all the symptoms of the disease pass off completely.

The cause of the disease is quite unknown. The most likely theory is that some poison is circulating in the system which destroys the red blood cells and sets loose in the blood fluid the colouring matter they normally contain. The presence of this poison in the blood is considered to be due to the action of some as yet undiscovered micro-organism.

**Treatment.** There is no known treatment which will shorten the course of the disease or render it less dangerous. All that the physician can do is to direct his efforts towards preventing the supply of urine from falling below

the limits compatible with life, to encourage the heart's action by suitable drugs, and to keep the fever within limits.

In most cases death is caused by a stoppage of the flow of urine, the result of the action of the free colouring matter in the blood on the secreting cells of the kidney. The patient, therefore, should be given from a quarter to a half of a pint of water hourly unless vomiting is severe and continuous. In the latter case the same amount may be injected into the bowel. As an additional means of supplying the system with an abundance of fluid for the formation of urine a half pint to two pints of a 0·6 per cent. solution of sodium chloride in sterilised water should be allowed to run into one of the large veins of the arm through a hollow needle inserted into the vein. This interjection may be repeated daily if necessary.

On account of the risk of heart failure the patient, even in a fairly mild case should be strictly confined to his bed and not allowed even to sit up. The anæmia caused by the breaking down of quantities of the red blood cells always results in a weakening of the heart's action, hence suitably prescribed heart, stimulants (strychnia, alcohol, etc.) may be required.

The very high fever is best treated by sponging the patient with cologne and water or alcohol and water, or by wrapping in wet sheets or by gently lifting him (without the patient's making any exertion himself) into a cold bath.

Throughout the course of the disease quinine is useless, and has even been known to cause relapses.

Even in those cases which recover completely relapses are not uncommon and may occur months after the original attack.

Because of the intense anæmia (the result of the destruction of the red blood cells) the patient nearly always needs a long course of blood-forming tonics containing iron or arsenic or both.

The following is a useful mixture here :

℞						
	Solution of ferric chloride	..	..	..	..	2 drachms
	Hydrochloric solution of arsenic	..	..	..	..	48 minims
	Glycerin	..	..	..	..	3 drachms
	Chloroform water	..	..	..	to make	12 ounces

Make into a mixture. Take two tableaspoonsful three times a day, after meals.

In place of the above mixture the following pill which, in addition to the arsenic and the iron, contains a tonic dose of digitalis (sometimes of great benefit to the weakened heart), may be prescribed :

℞						
	Iron arsenate	..	..	..	..	1 grain
	Reduced iron	..	..	..	..	40 grains
	Powdered digitalis	..	..	..	..	2½ "
	Powdered capsicum	..	..	..	..	10 "
	Syrup of glucose	..	..	enough to make	20 pills	

Make into twenty pills. Take one pill three times a day, after meals.

**BLADDER.** There are two bladders in human beings, the gall bladder and the urinary bladder.

The gall bladder lies under the liver from which it receives superfluous bile and stores it up until wanted for use in the intestinal tract.

The urinary bladder is situated in front of the rectum (lower end of the large intestine), in the pelvis or lowest part of the body. From each kidney a tube (ureter) conveys urine to the bladder, whence it is discharged at intervals through the urethra. The bladder normally holds about a pint, but is capable of greater distension. The outlet into the urethra is kept closed by a ring of muscle which yields when it is necessary to empty the organ.

**BLADDER, DISEASES OF.** Under this heading will be discussed only diseases of the urinary bladder. (For diseases of the gall bladder, see under GALL BLADDER.)

**ATONY OF THE BLADDER** means a deficiency of power of the muscular walls of the organ, so that it cannot contract down normally when attempting to expel

its contents. The usual cause is over-distension of the organ, the result of the patient voluntarily retaining his water too long, or because a stricture or enlarged prostate prevents its being passed.

Inflammation of the muscle fibres in cystitis and degeneration of the whole muscular coat in old age may also cause atony. Treatment consists of drawing off the patient's water through a hollow tube or catheter passed into the bladder (with the most stringent antiseptic precautions) twice or three times daily, together with the internal administration of some bracing tonic such as the following :

℞

Solution of strychnine hydrochloride	..	..	48 minims
Dilute phosphoric acid	..	..	3 drachms
Chloroform water	..	..	enough to make 8 ounces

Make into a mixture. Take one tablespoonful three times a day, after meals.

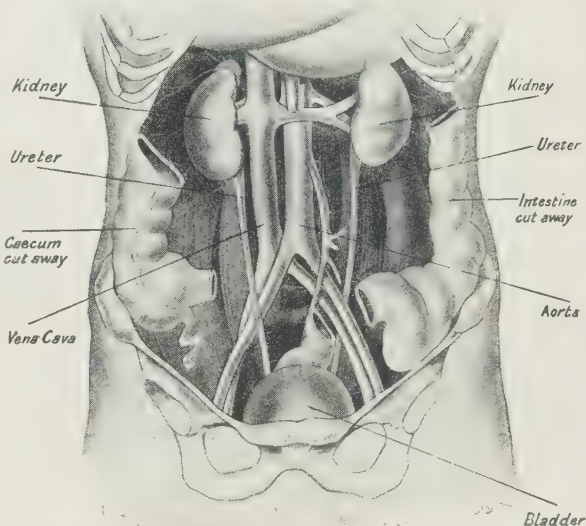


DIAGRAM OF THE BLADDER, THE URETERS AND KIDNEYS

**CANCER OF THE BLADDER** is not uncommon, the organ being attacked occasionally by either a true cancer (epithelioma) or by a sarcoma (fibrous tissue cancer).

Pain, the frequent necessity to pass water, with a few drops of blood occasionally being passed towards the end of the flow, occurring in a man past middle-life should suggest the possibility of cancer. Sometimes there is intense pain at the base of the bladder. The presence of the tumour soon sets up a cystitis, and the urine becomes alkaline, turbid, and foul smelling.

On account of the nature of the organ operative treatment rarely holds out any great hopes of permanent relief. Too frequently all that can be done is to lessen the patient's suffering by daily washing out the bladder with a warm boracic solution (ten grains to the ounce), and controlling the pain with hypodermic injections of one-quarter to one-sixth of a grain of morphia when required.

**CYSTITIS OR INFLAMMATION OF THE BLADDER** may be either acute or chronic. In both these varieties some germ is always to be found in the bladder as the actual or secondary cause of the inflammation.

**In Acute Cystitis**, more or less pain, both in the pelvis and in the loins, together with a frequent necessity to pass small quantities of thick turbid water, are the chief symptoms. In severe cases there may be pronounced chilly sensations, with fever up to 102 to 104 degrees. The water passed may be distinctly foul-smelling. On standing in a tall, narrow, glass vessel a whitish sediment settles at the bottom.

**Causes of Acute Cystitis.** A chill or the introduction of bacteria into the bladder (as, for example, on a catheter which has not been kept surgically clean that is absolutely germ-free), or the spread backwards of gonorrhœa may set up acute cystitis. The ailment may also develop in the course of influenza, typhoid, or other fever.

Germs from a diseased kidney passing down the ureter into the bladder may there set up an acute inflammation or cystitis.

**Treatment.** The patient should be put to bed at once, and hot fomentations, prepared by wringing out towels in almost boiling water, should be placed over the bladder region. A hot sitz bath kept at a temperature of about 106 degrees by the addition of more hot water from time to time often gives great relief from the pain. The patient may stay in the bath (if the exposed parts of his body are well wrapped up) for a quarter of an hour. On returning to bed he should be thoroughly wrapped in hot blankets to prevent chilling. A sitz bath of this sort, if it gives relief, may be repeated twice or even three times during the day.

To increase the amount of urine formed the patient should drink during the day several pints of plain water, mineral water, milk, or milk and soda. Alcoholic stimulants of all kinds, as well as all spiced foods, pepper, etc., are



absolutely forbidden. The diet should be entirely composed of milk, milk foods, broths, jellies, and lightly cooked or raw eggs.

At the commencement of the attack the urine is frequently abnormally acid, though, in the later stages, it may turn highly alkaline with a distinct odour of ammonia.

Where the urine is shown to be highly acid (by turning red a piece of blue litmus paper wet with it), the following mixture is recommended (Pardoe) :

℞	Potassium bi-carbonate	..	..	..	..	160 grains
	Potassium citrate	..	..	..	..	160 "
	Tincture of hyoscyamus	..	..	..	..	4 drachms
	Infusion of buchu	..			enough to make	8 ounces

Make into a mixture. Two tablepoonsful to be taken every three or four hours until some relief is obtained, and then reduced in frequency.

Where the acute cystitis is due to gonorrhœa the same authority recommends as of great value the following mixture :

℞	Oil of sandalwood (fresh)	..	..	..	..	2 drachms
	Powdered gum acacia (fresh)	..	..	..	..	4 "
	Potassium bi-carbonate	..	..	..	..	4 "
	Salol	..	..	..	..	40 grains
	Spirit of peppermint	..	..	..	..	24 minims
	Water	..	..	..	..	to make 8 ounces

Make into an emulsion. Two tablepoonsful to be taken every four hours until the characteristic scent of the sandalwood oil appears in the urine. The administration then should be reduced in frequency.

Throughout the course of the ailment it is essential that there be a daily free movement of the bowels. To accomplish this a teaspoonful of a mixture of equal parts of confection of sulphur and confection of senna may be taken at night when necessary.

Where the test with litmus paper (which can be obtained from any chemist) shows by the paper remaining blue that the urine is alkaline, urotropin, which is the most powerful urinary antiseptic used in medicine, may be taken three times a day, in five to fifteen grain doses dissolved in water. Under its influence the urine speedily loses its high-smelling odour, while the bladder irritability is markedly relieved.

Urotropin sometimes brings out a rash, roughly resembling that of measles, and itching slightly. Should this occur the drug should be discontinued for a time, and then begun again in smaller doses and continued until the urine becomes free from all ammoniacal odour and clear in appearance.

In the later stages, when all acute irritation has passed off, washing out the bladder with silver nitrate in the strength of one to three grains to the pint of distilled water, the strength of the silver being gradually increased as the bladder becomes more tolerant of the drug, will often hasten the cure. Washing out the bladder in acute cystitis should never, however, be undertaken except by a surgeon with wide practical experience of these cases.

Usually the pain can be controlled by the above measures. Occasionally, however, in very severe cases, the physician may see fit to give a hypodermic injection of a sixth of a grain of morphia, or a suppository containing a quarter of a third of a grain of morphia may be placed in the rectum.

**Sub-Acute Cystitis** is a term sometimes applied to those cases which, from the start, more or less, follow the course of a typical chronic cystitis. The treatment is the same as in chronic cystitis.

**Chronic Cystitis**, or chronic inflammation of the bladder, may be due to the spread of gonorrhœal infection to the bladder, to tubercular disease of the organ, or to the presence of other germs which have found their way into the bladder from the adjoining intestine. Ordinary pus-forming bacteria introduced into the bladder on an unclean catheter may set up a chronic cystitis.

The presence of a stone in the bladder, or a tumour of any kind, always results in a certain amount of chronic inflammation or cystitis. Other causes are stricture of the urethra and chronic enlargement of the prostate gland, both of which lead to stagnation and putrefaction of the urine by preventing the free emptying of the bladder. Again a chronic cystitis may be due to the presence in the blood of a worm called the *Bilharzia Hæmatobia* (*which see*), or may develop in the course of typhoid, influenza, or other acute disease. An acute cystitis may gradually develop into the chronic type, and persist for many months.

**Symptoms of Chronic Cystitis** may closely resemble those of the acute form of the disease. The pain, however, is less acute, there is little or no fever, and the patient's chief complaint may be the pressing necessity of passing at very frequent intervals small amounts of turbid and foul-smelling urine.

**Treatment.** If possible, a vigorous attempt should be made to remove the active cause. For example, if dependent on an enlarged prostate, a stone in the bladder or a stricture, an operation should be performed for its removal.

This accomplished the surgeon in charge will direct his attention to freeing the bladder of germs within it, to lessening its irritability, and to relieving the pain and the necessity of constantly having to pass small amounts of water.

The treatment usually adopted consists of a daily washing out of the bladder with suitable antiseptics such as boracic acid solution, ten grains to the ounce ; nitrate of silver, one part of the silver to 2,000 or 3,000 parts water ; permanganate of potash, one part of permanganate to 5,000 parts water ; or perchloride of mercury, one part of the perchloride to 20,000 parts of water.

The urine is always more or less cloudy and foul-smelling, due to decomposition which takes place within the bladder. As a means of bringing it back to its normal clearness and odour, urotropin, ten grains dissolved in a little water, and taken three times a day, often is of the greatest value. If the patient can stand its sickening taste, oil of yellow sandal wood, five to ten minims in capsules taken three times a day, may be used as an alternative to the urotropin, one preparation being taken for a few days, and then the other for a few days.

Whereas, in the other types of cystitis, the outlook is generally good as to recovery if the causes can be removed ; in tuberculous systitis the prognosis is always very grave. Tuberculin injections and, in some cases, an operation for scraping away the diseased areas in the bladder may be tried, but too often the results are disappointing. Building up in every possible way the patient's general health is generally all that can be done in these cases. Under the ordinary treatment suggested above for chronic systitis in general, the chief symptoms of pain, frequency of passing water, turbidity of the water, and the presence of tubercle bacilli may all pass off ; but a recurrence of the disease is only too likely to occur.

**RUPTURE OF THE BLADDER** is usually the result of a kick or blow on the lower abdomen when the bladder is full. It may also occur in fracture of the pelvis, or when from any cause the water has been held for an abnormal length of time.

**Symptoms.** The chief diagnostic symptom is inability to pass water, and the lack of any wish to do so. Pain is variable, sometimes being severe from the first, in other cases not coming on for twenty-four hours or more.

If rupture of the bladder is suspected, the failure of a soft catheter passed into the organ to bring away any urine makes the diagnosis practically certain.

The outlook depends largely on whether the tear in the bladder is through the portion covered by the peritoneum (the lining membrane of the abdomen), thus allowing the bladder's contents to escape into the abdominal cavity, and so set up peritonitis, or through the lower part, which is not covered by the peritoneum, in which case the urine filters through into the adjoining soft tissues.

**Treatment.** In either case an immediate operation must be performed. Where the bladder has emptied itself into the peritoneal cavity, the abdomen must be opened, and the contents must be carefully cleansed of the escaped urine. The bladder should then be carefully stitched up so as to make it watertight.

If the tear is through a section of the bladder not covered by the peritoneum, a free incision must be made into the soft tissues into which the urine has found its way, and free drainage must be maintained by the insertion of drainage tubes.

Rupture of the bladder is always a very serious accident, but if an operation is performed at once, and in particular if the tear does not open up into the peritoneal cavity, the outlook is by no means hopeless.

**STONE IN THE BLADDER** may vary in size from a minute sand up to solid masses as large as a duck's egg. The three main varieties are:

(1) Uric acid stones due to over acidity of the blood and gouty or rheumaticy constitutions.

(2) Oxalate of lime stones, most commonly found in thin, nervous, ill-nourished people.

(3) The phosphate stones, often very large, resulting from chronic irritation of the bladder and decomposition of the urine.

**Symptoms** are usually the same as in chronic cystitis, although there may be sharp pains noticed occasionally, always at the same spot.

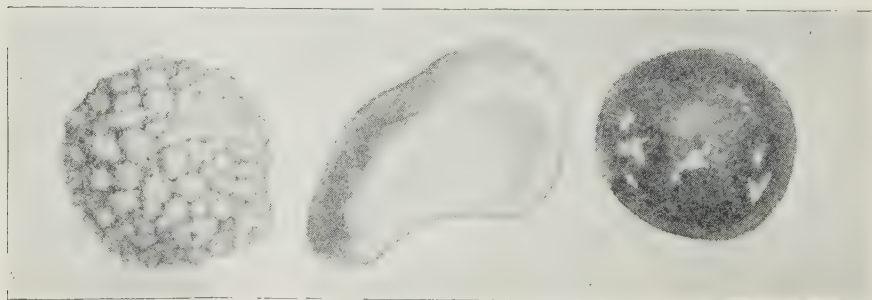
**Treatment.** It is usually a waste of time to attempt to dissolve the stones by medicines or mineral waters. An operation should be performed by a surgeon, either for removing the stone whole through an incision in the anterior abdominal wall, or else he should first crush them within the bladder by special forceps passed through the urethra, and then wash out the fragments.

**TUMOURS OF THE BLADDER.** Of the non-malignant types the commonest is the papilloma or villous tumour, a soft feathery growth, the chief symptom of which is the occasional presence of blood in the urine. A papilloma or villous tumour may be quite painless, though its presence usually causes a certain amount of irritability of the bladder with a consequent frequent necessity to pass water. The only treatment is an operation for removal of the tumour.

**BLAUD'S PILL** is a favourite preparation of iron, chiefly used in anæmia. Each five-grain pill contains one grain each of carbonate of iron (ferrous carbonate). The dose is one to three pills.

Blaud's pill is especially efficacious in those types of anæmia where there is a great deficiency of haemoglobin or red colouring matter in the blood. (See CHLOROSIS, under heading ANÆMIA).

One pill is usually taken after meals, three times a day at the start. Unless indigestion or troublesome constipation is set up (which are rare with this preparation), the dose may be increased with advantage until eight or nine pills are taken a day. A great advantage of the Blaud's pill over certain of the liquid preparations is that it has no harmful effect on the teeth.



STONE IN THE BLADDER

The stones shown are oxalate, phosphate, and uric acid stones.



The official prescription for Blaud's pill is as follows :

R	Exsiccated ferrous sulphate	..	..	..	150 parts
	sodium carbonate	..	..	..	95 "
	Gum acacia	..	..	..	50 "
	Tragacanth	..	..	..	15 "
	Glycerine	..	..	..	10 "
	Syrup	..	..	..	150 "
	Water	..	..	..	a sufficiency

Divide into five grain pills. Dose, one to three pills.

**BLEAR EYE.** See BLEPHARITIS.

**BLEBS.** Another name for blisters.

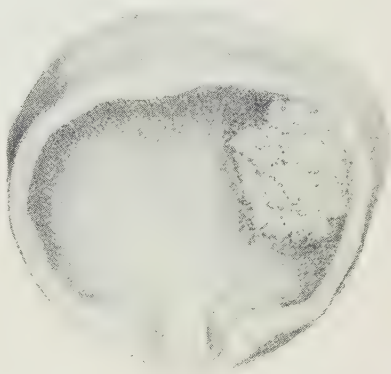
**BLEEDER'S DISEASE or HÆMO-  
PHILIA.** This name is given to sufferers from a peculiar inherited condition, the only symptom of which is a tendency to bleed profusely and indefinitely from the slightest wound.

The condition is thought to be due to an inherited deficiency in certain ingredients in the blood which lead to clotting, or else to an abnormal thinness of the vessel walls.

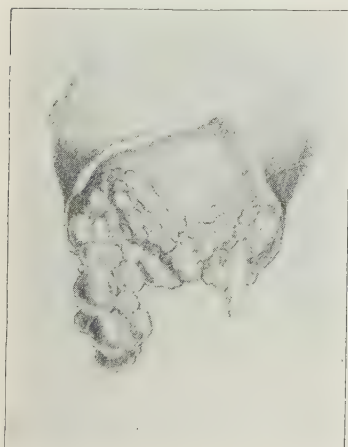
An interesting point about the disease is its peculiar hereditary nature. Although found almost entirely in males, it is transmitted almost solely through females. Thus in a family several of the brothers may be "bleeders" themselves, but their children do not inherit the tendency. The sisters in the family probably will not be "bleeders" themselves, but they are very apt to transmit the tendency to their children, the boy children being "bleeders" and the girls escaping.

The disease is usually first noticed by the profuse bleeding which takes place at the first of the many accidents of childhood where a lip or a finger is cut. Ordinary remedies used to stop the bleeding are all useless, and the hæmorrhage may persist despite everything until a dangerous or even fatal loss of blood has taken place. Little can be done apart from the ordinary procedure of applying pressure to the wound, except to keep the patient in bed until the bleeding stops of itself.

Hæmophilia is commonest in families the men of which are vigorous and well-grown, and of thin-skinned, fair complexions. While the condition usually shows itself



VILLOUS TUMOUR OF THE BLADDER



POLYPI IN THE BLADDER

before babyhood is passed, it may not be discovered until adult life is almost reached.

Sometimes profuse and persistent bleeding may occur quite spontaneously. Most commonly this takes the form of bleeding from the nose ; in other cases a mass of blood may be poured out into the tissues under the skin, or a joint, such as the knee, suddenly becomes filled with blood. A blow which, without breaking the skin, would result in an ordinary individual in a slight black-and-blue mark, may lead to the rapid formation of an extensive blood tumour in a "bleeder." Chloride of calcium 5 grains every hour for twelve hours has been recommended on the theory that lack of calcium salts in the blood is the cause of its failure to clot in the ordinary way. In persistent nose-bleed in a "bleeder," spraying the nostrils with a solution of 1 drop of adrenalin in 4 tablespoonsful of water by constricting the ends of the torn vessels sometimes stops the hæmorrhage.

Recently some success has attended serum treatment of hæmophilia. Fresh blood serum, obtained from the horse, may be given by the mouth or injected under the skin or into a vein. From 10 to 15 cubic centimetres may be given hypodermically to a child of ten, or about half those amounts when the injection is made into a vein. In an emergency, if freshly prepared horse serum cannot be obtained, ordinary anti-diphtheritic serum may be used. (Lovell Gulland.)

As a result of the bleeding, the patient is frequently left in a debilitated and highly anæmic state. An easily digested bracing tonic such as the following may be given with good results here :

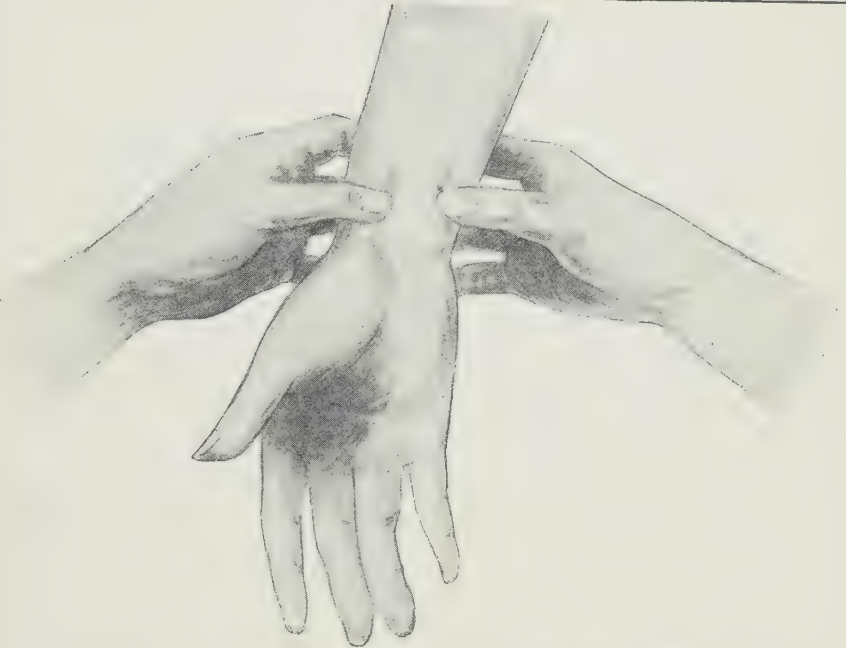
℞					
Solution of ferric chloride	..	..	..	..	40 minims
Tincture of nux vomica	..	..	..	..	20 ..
Syrup of orange peel	..	..	..	..	4 drachms
Water	..	..	..	..	to make 2 ounces
Make into a mixture. Take one teaspoonful three times a day, after meals.					

After an attack of bleeding of any severity, the child is usually better in bed for a few days. In many cases the tendency to profuse bleeding after any slight injury passes off with advancing age.

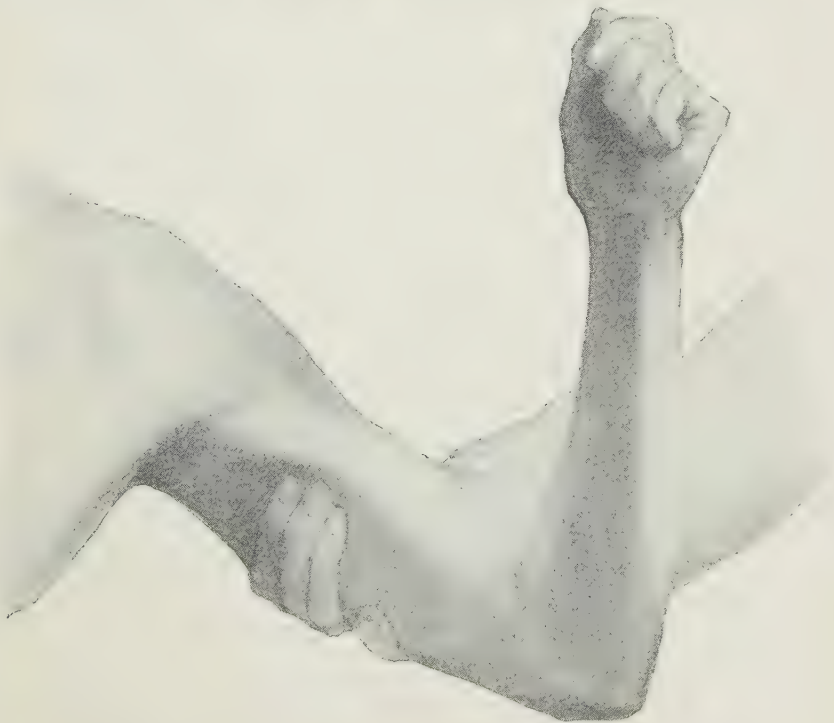
**BLEEDING OR HÆMORRHAGE** may be external, as from the nose or any wounded part, or it may be internal, as into the pleura, the peritoneum, the stomach, the kidneys, etc. Whether it is internal or external, the patient entirely loses the shed blood, which is of no value to him once it gets outside the blood-vessels.

Bleeding may occur from arteries, veins, or capillaries (the very small vessels which unite arteries to veins).

These various forms may be distinguished by the following characteristics. Blood from the arteries is bright red, and comes away in spurts. Blood from



WHERE TO APPLY PRESSURE TO CONTROL BLEEDING IN THE HAND



WHERE TO APPLY PRESSURE TO CONTROL BLEEDING IN THE ARM

the veins is of a dusky red or a purple hue, and flows in a steady stream. Blood from the capillary vessels is redder than venous blood, and it oozes out of the surface of the wound.

Of the three forms bleeding from an artery is the most serious, the blood flowing in larger quantities than from a vein, owing to the higher pressure. When a large artery is opened the patient may bleed to death in a few seconds.

Bleeding from a vein is not often dangerous to life, but it may sometimes cause death when the wounded vein is of large size. Vein bleeding can nearly always be readily stopped by pressure.

Bleeding from capillaries is slight, and it stops, as a rule, within a few minutes. Capillary bleeding may, however, be very obstinate and uncontrollable in the case of "bleeders." (*See BLEEDERS.*)

Bleeding may further be described, according to the time at which it occurs, as primary, reactionary, and secondary. Primary hæmorrhage is the bleeding which occurs when a wound is first inflicted. Reactionary hæmorrhage occurs within a few hours (at the longest twenty-four hours), after a wound or surgical operation. It is usually due to faulty ligaturing (tying) of an artery, or neglect to ligature a smaller artery at the time of the operation. Secondary hæmorrhage is rather dangerous, but fortunately rare. It occurs several days after an operation or wound, owing to the repair processes being defective.

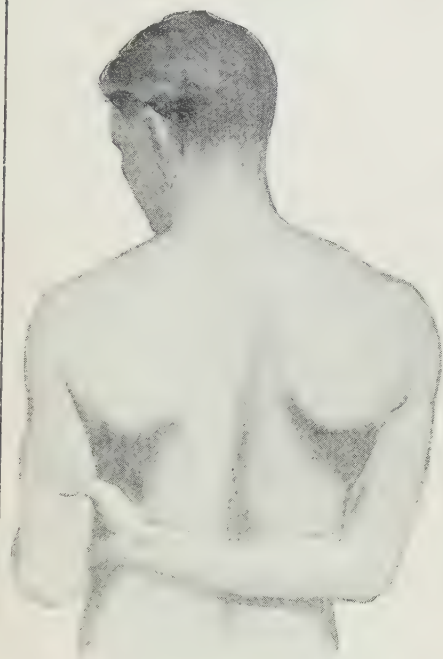
Hæmorrhage in certain parts of the body is given specific names. Thus we have cerebral hæmorrhage (one of the causes of apoplexy) occurring from an artery in the brain; hæmoptysis or bleeding from the lungs; hæmatemesis or bleeding of the stomach; hæmaturia (blood in the urine), or bleeding in the kidneys or urinary passages; epistaxis or bleeding from the nose.

In some diseases bleeding is common, as in consumption, scurvy, certain kinds of kidney disease, and ulcers of the stomach or intestines. After the extraction of a tooth or the application of a leech, bleeding may continue for some time. This is most likely to occur in those people whose blood does not readily coagulate (clot).

The effects on the patient depend to a great extent on the amount of blood lost, and the rapidity of the bleeding; but they are also modified by the age, state of health, and the sex. Women bear loss of blood better than men, and more quickly recover from its effects. Both children and old people are profoundly affected by serious loss of blood. But while children quickly make good the loss, old people are slow to recover.

Copious bleeding from a large vessel produces faintness, pallor of the skin, giddiness, hurried breathing, and a feeling of suffocation. Dimness of sight, noises in the ears, thirst, and great restlessness are other common results. Finally the patient becomes unconscious. The bleeding may then





PRESSURE ON THE SUBCLAVIAN ARTERY  
BY DRAWING THE ARM TIGHTLY AGAINST  
THE RIBS



PRESSURE ON THE FEMORAL ARTERY  
CONTROLLING BLEEDING IN LEG OR  
THIGH



PRESSURE ON THE ARTERY BEHIND THE ANKLE TO CONTROL BLEEDING FROM THE SOLE  
OF THE FOOT

stop, and he may recover if the loss of blood has not been too great. If the bleeding does not stop he quickly dies. It is said that when a person quickly loses somewhat less than half the blood in his body he dies.

When the bleeding is less rapid the pulses become slow and feeble, the skin yellow or white, and the whole body appears shrunken. There is usually great thirst.

**Treatment** consists of measures to stop the bleeding, and to combat the weakness and collapse caused by the loss of blood. In most ordinary wounds the bleeding stops spontaneously by the formation of a blood-clot and the contraction of the inner coats of the injured end of the artery. An artery which is only partly severed does not contract; hence bleeding from such a wound goes on for a longer time than from a completely divided vessel. If an artery is torn it closes more quickly than when clean cut, and the bleeding stops sooner.

**EXTERNAL HAEMORRHAGE.** There are four chief measures used to stop external bleeding, namely: pressure on the bleeding part, pressure higher up on the artery which supplies the part, elevation of the part, and the application of heat, cold, or other "styptics." The precise measures to adopt will depend on the part of the body that is wounded.

In a slight wound of the hand, arm, foot or leg raise the part as high as possible, and direct a stream of cold water on it by means of a syringe. In most cases this procedure will stop the bleeding. Ice is more effective than water, but there is considered to be some danger of causing gangrene by its use.

In wounds of these or other parts the simplest method of controlling the bleeding is to press the fingers on the bleeding points. At the same time, when practicable, apply pressure on the artery above the bleeding point. If a vein is wounded, apply pressure on the end further from the heart. Later on, when the bleeding is less, a pad of lint secured by a tight bandage can be substituted for the fingers on the wound. Pressure is useful particularly in bleeding from a medium-sized artery or from a vein, or when a bone lies under the wound against which the vessels can be compressed.

**Where to Apply Pressure.** For the application of pressure to an artery above the wound some little knowledge of anatomy is essential. The following instructions will be found useful.

**Bleeding from the Hand.** Press on the radial artery in the front of the wrist above the root of the thumb, and on the ulnar artery at the other margin of the wrist close to the hand.

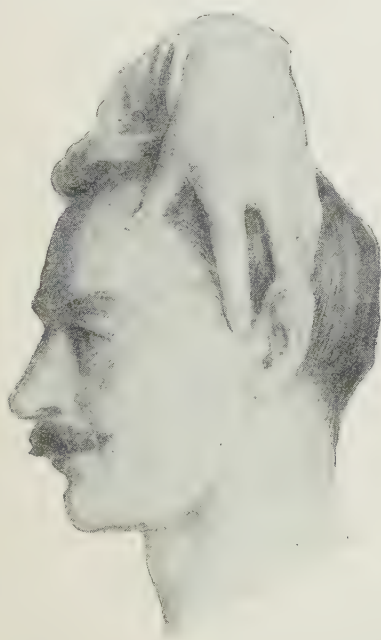
**Bleeding from the Forearm** or elbow region. Press the brachial artery against the bone of the upper arm (the humerus). This artery will be felt pulsating on the inner side of the upper arm behind the biceps muscle. Or place a pad in the hollow of the elbow, and then bend the arm forcibly at this joint.



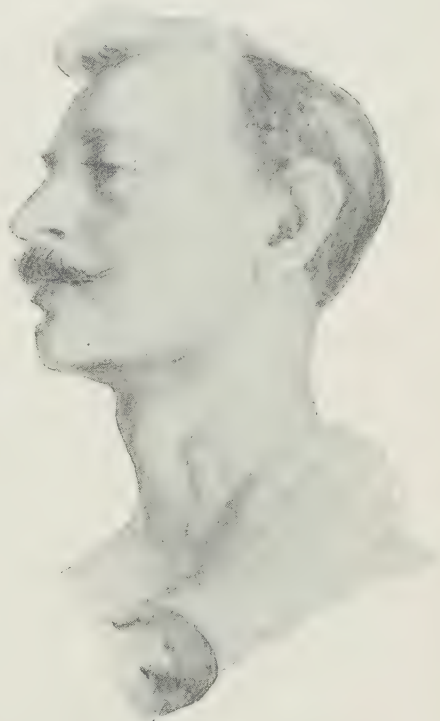
PRESSURE ON THE SUBCLAVIAN ARTERY  
FOR BLEEDING FROM THE REGION OF THE  
ARM PIT OR SHOULDER



PRESSURE ON THE FACIAL ARTERY FOR  
BLEEDING FROM THE CHEEK



PRESSURE ON THE OCCIPITAL ARTERY FOR  
BLEEDING FROM THE SCALP



BLEEDING FROM THE NECK

**Bleeding in the Region of the Armpit or Shoulder.** Place the thumb on the subclavian artery at the middle part of the hollow under the collar-bone, and compress the artery downward against the first rib. Pressure can also be put on the subclavian artery by drawing the injured arm tightly against the ribs, the free arm being placed behind the back for this purpose, as shown in the diagram on page 235.

**Bleeding from the Sole of the Foot.** Press on the artery which runs down about half an inch behind the inner ankle.

**Bleeding from the Leg or Thigh.** Compress the femoral artery against the head of the thigh-bone. This vessel may be felt beating in the middle of the groin. Bleeding from the leg may also sometimes be stopped by placing a pad in the hollow of the knee and forcibly bending the leg.

**Bleeding from the Cheek.** Press the finger on the facial artery where it crosses the jaw bone, about an inch in front of the angle of the jaw.

**Bleeding from the Fore Part of the Scalp.** Press on the temporal artery in front of the upper edge of the ear.

**Bleeding at the Back of the Scalp.** Compress the occipital artery against the bone a little way behind the ear.

**Bleeding from the Neck.** Press on the carotid artery a little below and on the outer side of Adam's Apple. This is sometimes dangerous, as a nerve which goes to the heart may be compressed, leading to stoppage of the heart.

Another way of stopping bleeding in the limbs is by the application of a tourniquet. Tourniquets are supplied by surgical instrument makers, but one may be improvised as follows: In a wound of the hand, foot, leg, or arm, first raise the limb to empty it partly of blood. Then tie a handkerchief loosely round it above the bleeding part. Run a stick under the bandage and twist it until the tightening of the bandage stops the bleeding. If a knot is made in the handkerchief, or a stone or other hard object rolled in it, and if this be placed on the artery above the wound (as described above) it will be still more effective.

The use of styptics is best left to the surgeon, who should be sent for in all cases of serious bleeding. The styptics commonly employed are tannin, perchloride or iron, gallic acid, turpentine, mattico leaves and alum. They are used mostly in oozing wounds and bleeding from mucous surfaces such as the interior of the nose. Adrenalin (one part in 1,000 parts of water) is a very powerful styptic now in common use by surgeons.

Other methods practised by the surgeon are (1) torsion, in which the end of the bleeding vessel is seized in a pair of forceps and twisted; (2) forcipressure, in which the end of the artery is seized in forceps which are then kept closed by a clip and allowed to remain until a clot forms, and (3) ligature, the commonest surgical method of stopping bleeding. In this latter method the artery is tied with silk or catgut.



**Internal Bleeding** is often very difficult to check. When this occurs the patient must be kept lying down in a state of perfect rest. All excitement of mind is to be avoided. No stimulants are to be given, all food must be liquid and cold. Other measures depending on the seat of the hæmorrhage, and which can be carried out only by a doctor, may be required.

**Effects of Bleeding.** When serious bleeding has left the patient weak, the following measures should be taken after the bleeding has been stopped: Put the patient to bed, and keep him warm with blankets. Keep his head low. Give a little beef-tea and, if necessary, a little whisky and water, or a warm enema of half an ounce of whisky in six ounces of water.

When the collapse is profound, and there is danger of death, lower the patient's head over the side of the bed, apply cloths wrung out of hot water to the head, and place hot-water bottles in the armpits and between the thighs, and give an enema of hot whisky or brandy and water, as above. An injection into a vein of one or two pints of normal saline solution may be of great service in replacing the fluid the tissues have lost.

**BLÉNORRHŒA** is a profuse discharge of mucus from the mucous membrane of the nose, eye, bowel, or other part.

**BLEPHARITIS** or "Blair-eye," is a persistent low-grade inflammation of the edges of the eyelids

The commonest cause is eye-strain due to defective vision in children run down by disease or naturally weak. The edges of the lids may be constantly covered with dry, yellowish-brown scales on a reddened, sore-looking surface, or there may be yellowish crusts with ulceration of the edges of the lids. Many of the eyelashes drop out, and around the bases of the remainder little crusts often form. The lower lid is usually affected later and to a less extent than the upper lid.

**Treatment.** If there is no ulceration, but simply a reddened surface covered by dry scales, the eye should be gently bathed three or four times a day with equal parts of hot water and a boracic acid solution—ten grains of the acid to the ounce of water.

On waking in the morning the edges of the lid should be painted with a little dilute yellow oxide of mercury ointment on the end of a clean, fine, pliant brush kept for the purpose.

Where there are actual crusts with ulceration, the physician in charge may find it necessary to pull out certain of the diseased eyelashes before he can clear away the adherent yellow crusts. The eye should be bathed frequently with a warm boracic acid solution (10 grains of the boracic to the ounce of water) as above, and then some stimulating lotion such as a silver nitrate solution should be applied. The strength of the silver nitrate (from 3 to 10 grains to the ounce) must be decided upon by the physician after his examination of the case.

When the lids have been got into a cleaner condition, the boracic lotion should be continued several times a day, and night and morning the edges of the lids should be anointed with half strength yellow oxide of mercury ointment.

The state of the patient's vision should be looked into at once, as eye strain due to some uncorrected error of refraction may be the sole cause of the "blear-eye." The general health should be built up by taking a few weeks' course of some bracing tonic such as the following :

R

Iron and ammonium citrate	..	..	..	1½	drachms
Tincture of nux vomica	..	..	..	1½	"
Spirit of chloroform	..	..	..	3	"
Water	..	..	..	enough to make	10 ounces

Make into a mixture. Take one tablespoonful in a little water three times a day, after meals.

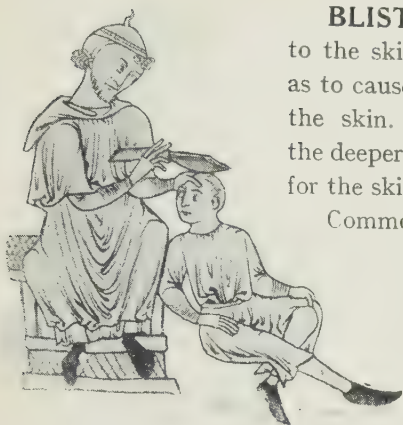
The disease is very catching, and sometimes runs through whole families, anyone in the least run down in general health, particularly children, being likely to become affected. No other members of the patient's household should sleep with the patient or use his sponge, towels, face cloth, etc.

**BLINDNESS** may result from many causes. Injury or disease, such as cataract and ophthalmia, may render the lens or the cornea opaque to light. The retina at the back of the eye may have its sensitive power destroyed. The optic nerve or the visual centre in the brain may be diseased. The subject will be fully described in "Diseases of the Eye."



SURGICAL TREATMENT IN THE MIDDLE AGES

Illuminations, depicting operations on the skull, from a 12th or 13th century Anglo-Norman MS. at Trinity College, Cambridge



MEDIÆVAL BRAIN SURGERY

An illumination from a 12th or 13th century MS.  
at Trinity College, Cambridge.

**BLISTERS.** Blisters are sometimes applied to the skin to irritate the surface over a part, so as to cause a flow of blood to the tissues just below the skin. The object is to relieve congestion of the deeper parts, by causing the blood to leave them for the skin tissues.

Common blistering materials are mustard, turpentine, strong liniments, cantharides, or Spanish fly, and chloroform.

To prepare a mustard blister, make the mustard into a fine paste with cold water, and spread on to linen or muslin and apply directly to the skin. Such a mustard plaster or blister may be left on from ten

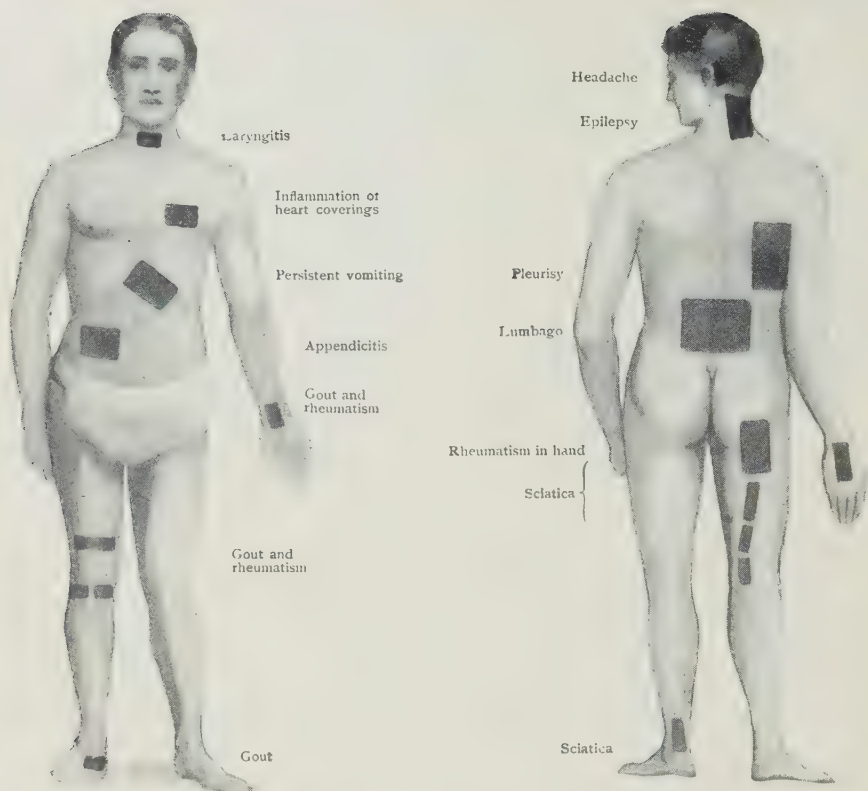
minutes in the case of a child, to twenty minutes in a grown person. After its removal the reddened skin may be gently painted with a little sweet oil to prevent further irritation.

A stronger blister is the cantharides blister, to be bought from the chemist. The skin should first be brushed over with oil, and then the black surface of the plaster pressed against it. The blister may be kept in place with a light bandage. It should be left on for some hours, and if a bleb results, this should be pricked to let out the fluid, then painted again with sweet oil, and lightly bandaged until the skin beneath becomes hard again.

Blisters are sometimes very useful in relieving pain in the chest in pleurisy and in consumption. In inflammation of the heart coverings (pericarditis) a blister over the heart area sometimes gives immediate and great relief. In sciatica a series of small blisters over the course of the sciatic nerve down the back of the leg is often a valuable counter irritant. In lumbago a blister or two in the small of the back sometimes greatly eases the pain. Blisters should always be used with great care in the case of children and invalids whose skin is usually delicate, otherwise a troublesome ulcer may develop on the site of the blister. In invalids and children, therefore, eight to ten minutes is the limit for the application of a blister.

**BLOOD** is composed of a fluid portion or serum, and a number of different kinds of blood cells. The chief function of the blood is to carry food, oxygen, and warmth to the various tissues of the body, and to receive from them waste products, to be finally got rid of through the lungs, kidneys, skin, and bowels, etc.

The blood cells or corpuscles are of three varieties. The commonest, the red corpuscles, should number about five million in each cubic millimetre of



#### WHERE TO APPLY BLISTERS FOR VARIOUS PURPOSES

Blisters are useful for relieving pain in several complaints. By irritating the surface of the skin they induce a flow of blood from deeper congested parts.

blood in health. These cells are disc shaped, and contain a red colouring matter called hæmoglobin, containing iron, which has the special property of absorbing gases.

The chief duties of the red corpuscle are (1) to absorb oxygen from the air breathed into the lungs, and to carry it to the tissues, and (2) to abstract from the tissues waste gases, such as carbonic acid, and to carry these to the lungs so that they may be expelled in the breath. The blood also collects waste matter, and carries it to the kidneys, where it is filtered out by the kidney cells and passed out of the system in the urine.

The white blood corpuscles, or leucocytes, are much fewer in number than the red cells, but are somewhat larger in size. Normally there are from four to six hundred of the red to each white blood corpuscle.

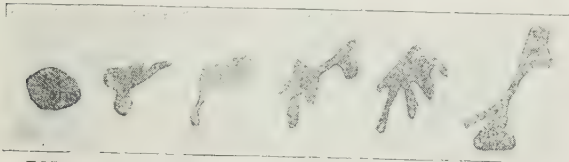
These white cells when at rest are circular in shape. They have the property, however, of throwing out little projections or arms, and so to speak pulling themselves along by these changes in their shape.

The white corpuscles form the chief bulk of "matter," or pus, found in abscesses and suppurated wounds. They are also found in fluid effusions



into the covering sac of the heart (the pericardium), in pleuritic effusions, and in purulent expectoration from the back of the throat and the lungs, etc.

Through their power of throwing out projections of their substance, certain of the white cells can take into their own bodies, and so destroy, foreign matters



FORMS WHICH THE WHITE BLOOD CELLS CAN TAKE  
The white blood cells (leucocytes or phagocytes) can pull themselves along and absorb foreign matters, such as microbes, by the power of changing their shape.

they come in contact with, notably disease germs. These germ-destroying white cells, or phagocytes, play an important part in guarding the system against disease, and in putting

an end to germ-caused diseases when once they have attacked us.

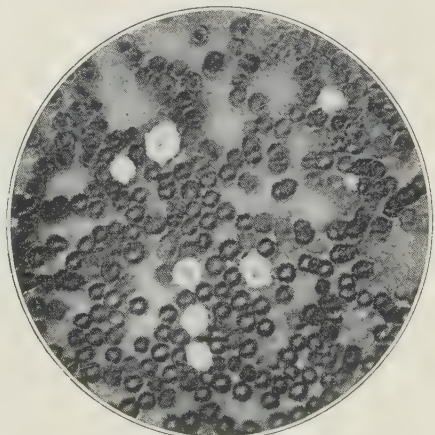
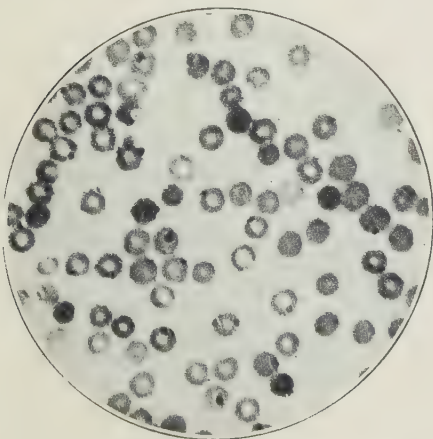
The white cells are also the chief material from which wounds are repaired.

The blood platelets, a third variety of cells, are very much smaller than the other varieties, and are fewer in number. Their exact function is not known.

The fluid, or plasma, of the blood, always contains valuable salts and albuminous bodies (taken up from the food in digestion), on which the tissues are nourished. The blood makes up about seven per cent. of the body weight. Its clotting action is due to the formation of a jelly-like substance in the serum, caused by the action of a ferment normally contained in the blood cells. When blood is shed, the cells degenerate and break down, and the contained ferment escapes into the blood-fluid or serum.

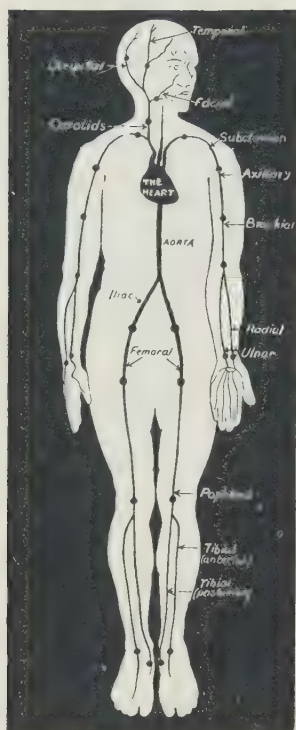
**BLOOD DISEASES.** See ANÆMIA and LEUCOCYTHÆMIA, SYPHILIS, etc.

**BLOOD-LETTING** is not practised now to the extent it was formerly but in some conditions it is a very useful measure. The two methods in common use are leeching and venesection, but wet-cupping is also sometimes employed.



TWO MICROPHOTOGRAPHS OF HUMAN BLOOD SHOWING THE CELLS  
Both photographs represent a magnification of nearly 600 times. In the right hand microphotograph the white cells (leucocytes) are picked out in white to distinguish them clearly.

Smith



THE MAIN CHANNELS OF BLOOD SUPPLY

An outline diagram of the arterial circulation.

**Leeching.** Leeches are brownish-black water worms, which when applied to the skin withdraw blood from near the surface, and so are useful in cases of local congestion with pain. In earache, a leech behind the ear often gives immediate relief. The severe pain in the head, in acute meningitis, is often greatly diminished by applying leeches behind the ears, to the temples, or to the back of the neck. They may also be used with advantage in inflammation of bones and joints, as well as in congestion of the liver, and in the early stages of inflammation of the covering sac of the heart (pericarditis).

A leech sucks about two teaspoonsful of blood, but bleeding continues after it is removed. When desirable, the bleeding can be increased by applying hot poultices, or cloths wrung out of hot water.

To make a leech bite, shave the skin if there are any stiff hairs, well wash it with soap and water, and then rub on a little milk or blood. Do not apply leeches to any part where pressure against a bone cannot be applied to stop bleeding.

Do not use them at night, as after-bleeding may go on to a dangerous extent unperceived.

Do not forcibly detach the leech, but let it drop off spontaneously. When desired to remove it, shake a little table salt over it, and it will drop off of itself.

To stop the bleeding, apply firm pressure with the finger for a few minutes. Then cover the wound with a pledget of cotton wool, and bind firmly. If pressure fails to stop the bleeding, put a little powdered alum on the wound.

**Venesection** is carried out by opening a vein, usually the one just above the bend of the elbow.

The arm is first carefully washed with soap and water, and then rubbed over with a little alcohol on some cotton wool. The surgeon puts a tight bandage round the upper arm, which makes the veins stand out. He then opens the vein with a lancet, and when sufficient blood has flowed out, he presses a piece of sterile gauze over the wound, removes the bandage on the upper arm, and then firmly bandages a pad of lint over the wound.

Venesection is sometimes useful in apoplexy, in cases of drowning where the heart has become over-full of blood, in the early stages of acute pneumonia and pleurisy, to relieve pain, and in later stages when breathing is seriously obstructed, and the right side of the heart is gorged with blood.

**Wet Cupping.** In this process the skin, having been washed and disinfected, is dry-cupped (*see under treatment of ACUTE BRIGHT'S DISEASE*), the congested skin is then scarified with a lancet, and the cupping-glass is applied once more when blood flows into it. This is often a most useful measure in congestion of the kidneys. Wet-cupping, however, should never be attempted except by the physician in charge.

**BLOOD POISONING.** Three separate conditions may be included under this name. (1) *Sapremia*, in which poison manufactured by the germs



HOW TO APPLY A LEECH

of decomposition or disease has been absorbed by the blood, though no live germs are actually circulating in the blood stream, (2) *Septicæmia*, where germs themselves as well as their poisons are circulating in the blood; and (3) *Pyæmia*, in which, frequently as a later stage of septicæmia, multiple abscesses

break out in various parts of the body, due to living germs being carried to these parts in the blood.

**Causes.** Wherever there is an open, suppurating wound, an abscess or any collection of germs in the body, there is always a certain degree of sapremia present, as a result of the absorption of germ-made poisons. The chief symptoms of mild sapremia are headache and slight fever. If in the region where the germs are situated the abscess, wound, or inflamed area is not well walled off from the rest of the system (by the lymph material which Nature always pours into the adjoining tissues whenever any portion of the body is injured), the germs may find their way directly into the circulation through the walls of an artery or vein. The immediate symptoms of this condition (septicæmia) are severe shivering, hot and cold sweats, pains in the limbs and back, and high fever. If pyæmia supervenes, local abscesses will appear in various parts of the body.

**Treatment.** Septicæmia and pyæmia require drastic surgical treatment, and no time should be lost in calling in the surgeon, when after even the slightest wound shivering and fever are noted. In order to save life deep abscesses may have to be immediately opened and drained, or a limb may even have to be amputated. Even with the most thorough surgical



THE MEDICINAL LEECH  
The head with jaws is also shown



treatment the outlook is not encouraging. A fatal termination may be reached in some cases within three or four days after the onset. In others only after the patient has endured for weeks or months the daily opening or draining of a succession of abscesses does death from exhaustion relieve his sufferings. In a certain proportion of cases, however, the formation of new abscesses gradually ceases, and the patient after a long and tedious convalescence gradually regains his normal health.

Recently new hope in these cases has been held out in the treatment by injection of a serum prepared from the same variety of germ as that causing the patient's original wound. This treatment, of course, can only be carried out after a skilled and experienced bacteriologist has determined the exact nature of the germs in the abscess and in the blood. This is done by drawing off a portion of the patient's blood through a hollow needle inserted into a vein, and then cultivating or growing under the strictest aseptic precautions the germs found in the blood.

**BLOOD PRESSURE.** The pressure of blood in the heart and blood-vessels depends on two main factors—the force of the heart-beat and the resistance to the flow of blood in the vessels.

In a perfectly healthy person variations of blood pressure are of little or no importance; in states of disease they may be serious and dangerous. When the heart beats weakly, as in disease or after a sudden shock or emotion, the pressure falls and the person may become unconscious and even die. When the vessels are dilated, blood-pressure also falls. In this way a very hot bath may cause a fainting fit. On the other hand, muscular exertion raises blood-pressure; so does anything which causes general contraction of the blood-vessels. For the former reason a person with diseased and weak arteries may be attacked with apoplexy (bursting of a blood-vessel) after a severe effort; for the latter reason a chill, contracting the surface blood-vessels, may throw a dangerous strain on a weak heart.

Certain diseases of the kidneys and the liver obstruct circulation, and thus raise blood-pressure. This reacts on the heart and other parts. During inspiration blood-pressure rises, during expiration it falls. If a person holds his breath, the pressure of the blood in the heart and arteries may rise to a dangerous degree, especially in elderly people. Some drugs, such as digitalis, and stimulants generally, raise blood-pressure; others lower it, and, acting in this manner, nitrite of amyl and nitro-glycerine are useful in angina pectoris.

**BLOOD SPITTING (HÆMOPHYSIS).** The most common cause of blood spitting is consumption, but many other conditions may give rise to it.

Congestion of the lungs, whatever its origin, may cause spitting of blood. Thus, in lung congestion due to disease of the heart, or in the early stage of pneumonia, or where a tumour presses on the pulmonary veins, or even after violent exercise, blood spitting sometimes occurs. It may also be caused by tumours, abscesses, gangrene, or cirrhosis of the lung (a form of chronic

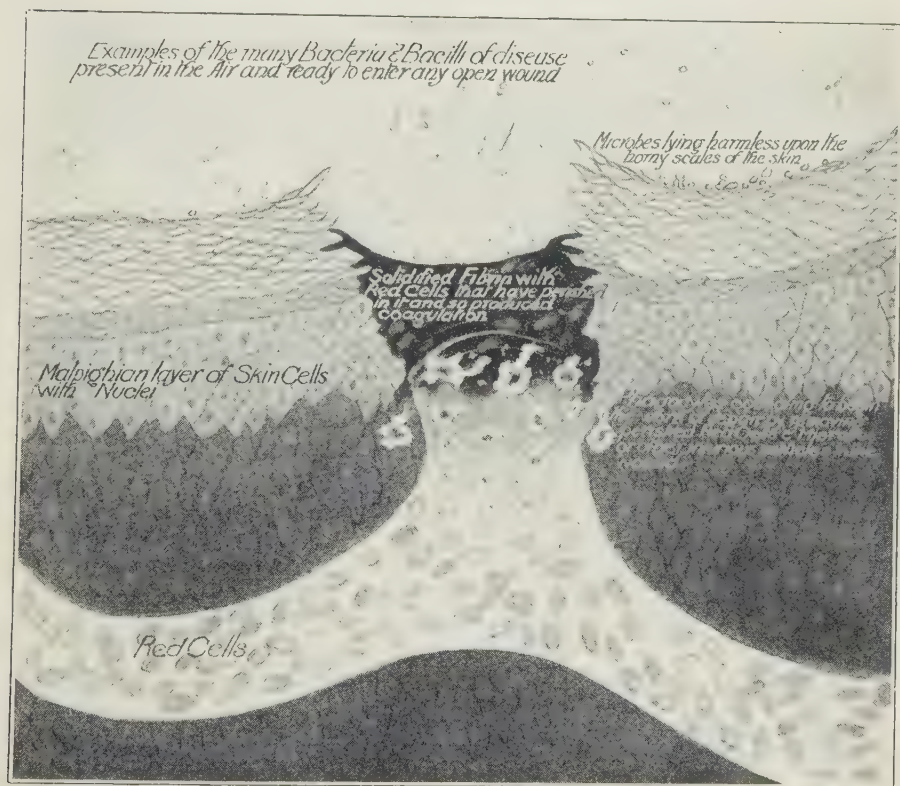


pneumonia) by ulcers in the bronchial tubes, the larynx, or the windpipe, and by altered states of the blood as in anæmia, scurvy, small-pox, yellow fever, etc.

As a rule, the blood coughed up is bright red in colour, frothy, and mixed with mucus. It may be very small in quantity or of considerable amount. Sometimes it comes up after a fit of coughing; at other times it wells up suddenly into the mouth without apparent cause. While the spitting may be of no great seriousness at times, it is an occurrence which should send the patient at once to the doctor.

**BLOOD VOMITING (HÆMATEMESIS)**, in which blood comes from the stomach, is to be distinguished from blood spitting, in which it comes from the lungs and air passages. The chief differences are that blood from the stomach is usually of a dark colour, or clotted, and is generally mixed with food, while blood from the lungs is a bright red colour, frothy, and mixed with mucus. Blood vomiting ceases abruptly; in blood spitting the sputum may be reddened for some time.

Blood vomiting may take place in a large number of widely different



A DIAGRAM OF THE BLOOD PROCESSES IN HEALING

A greatly magnified section of a portion of skin (about one-sixtieth of an inch) is shown with a wound—an almost invisible scratch which opens only a single minute capillary. The destruction of bacteria and the process of healing is effected by the phagocytes (white blood corpuscles), solid fibrin being formed in the blood clot.

conditions, such as cancer or ulcers in the stomach or the first part of the intestine (duodenum), injury to the stomach, irritant poisoning, rupture of an aneuism into the stomach, congestion or cirrhosis of the liver, blocking of the portal veins, or acute yellow atrophy of the liver. Certain altered states of the blood, as in severe anæmia, scurvy, malaria, diphtheria, yellow fever, small-pox, typhus fever, may be accompanied by blood vomiting. Very rarely it may be due to suppression of the menstrual flow in the female.

**Treatment.** Keep the patient at rest, and give him cracked ice to suck. He should have no food for some time after the occurrence, and in severe cases it is best not to give even liquids, though thirst may be a troublesome symptom.

An enema of half a pint of warm water may be given four or five times a day to relieve thirst.

Of course, the physician, who should be sent for at once, will try to ascertain the cause of the hæmatemesis and apply suitable treatment.

If the blood vomiting continues after twenty-four hours, he will need nourishment by the rectum. The following nutrient enema may be given then :

℞

One raw egg	..	..	..	..	..	..	..	..	..
Milk (peptonised, if possible)	..	..	..	..	..	..	..	2	ounces
Beef-juice	..	..	..	..	..	..	..	2	ounces
Brandy	..	..	..	..	..	..	..	1	drachm
Salt	..	..	..	..	..	..	..	$\frac{1}{4}$	drachm

As alternatives to the above, any of the nutrient enemata given under treatment of apoplexy (*which see*) may be given. Not more than three nutrient enemata of four to six ounces each should be given in the twenty-four hours.

**BLOTCHES.** See ACNE VULGARIS.

**BLUE DISEASE,** or Cyanosis, is a symptom, rather than a disease. It is due to some abnormality of the heart or weakness of the circulation which gives the skin, especially of the lips, nose and ears, fingers and toes a purplish-blue appearance.

In some children it exists from birth, or appears with the first week of life, as a result of congenital defects in the heart. Cough and difficult breathing accompany it. The children are dull and do not thrive.

Such children should be warmly clothed and constantly protected from chills. They should never be bathed in cold water.

**BLUE OINTMENT** is the common name for the ointment of mercury.

Mercurial ointment is much used for destroying parasites (pediculi) on the body, for which purpose it should be diluted with an equal amount of lard.

Blue ointment is also used as an inunction in syphilis, where it is desired to introduce mercury into the system by way of the skin. Mercurial inunctions

should never be undertaken except under the physician's supervision, as overdosage is quite possible. On the other hand, if the rubbings are not carried out thoroughly the mercury may fail to be absorbed.

**BLUE PILL** or mercury pill, is a mixture of mercury, confection of roses, and liquorice. The dose is from four to eight grains.

The blue pill is often useful where the liver is sluggish, because it increases the outpouring of bile, and is also considered to prevent too rapid decomposition of the bile.

The general symptoms suggesting that a blue pill might be required are a heavy, swollen feeling over the liver, constipation, a heavily-coated tongue, foul breath, and dull headaches. A blue pill at night, followed in the morning by a "black draught" (*see* BLACK DRAUGHT), often brings the system back into normal working order again within a few hours, perhaps averting a serious bilious attack.

**BLUSHING.** This embarrassing habit is for the most part confined to young people who are extremely sensitive, but occasionally older people suffer from it in a painful degree.

Those who are not so affected cannot realise how great is the misery of the unfortunate sufferers. Dr. H. Campbell has recorded several instances of men aged from twenty-nine to forty years of age who had to abandon their occupations on account of blushing, among them being a clergyman, a medical student, and a prison warder.

Blushing is an inherited evil. Those who suffer from it are usually shy, sensitive, and self-conscious. They are in a continual fear of betraying their emotion, and this makes them more liable to blush from the slightest cause. Friends and relatives have little pity, and are apt to chaff the poor sufferer continually, so that his defect is always kept before him. Besides the sensitive temperament, a contributory cause of blushing is very possibly to be found in a peculiar condition of the blood-vessels of the face, which makes them dilate more readily than in normal people.

Cure of the affection is extremely difficult in many cases. Most girls and boys, of course, grow out of it sooner or later, but with a few it is a permanent affliction. So far as there is a remedy, it rests very largely with the patient.

He should constantly strive to forget himself, to be as self-confident as others whom he knows. He should put away the fear that he will blush. After all, it is not a thing to be ashamed of; on the contrary, it is a sign of a sympathetic and sensitive disposition.

The sufferer should force himself to cultivate habits of sociability. At first this may be difficult and lead to an increase of the blushing, but in the course of time he will lose his self-consciousness, and find that he blushes much less frequently and less violently. Open-air games are to be recommended. Every kind of exercise that strengthens the body will reduce the

tendency to blush, but probably the best games are cricket, football, and such others as bring the patient frequently into contact with large numbers of persons.

Singing and reading aloud are very good remedial exercises. The digestive system must be kept in order, and the bowels regular. The patient's friends will help in the cure by avoiding unnecessary comment on his defect.

There are no drugs which will directly influence the tendency to blushing. Some simple tonic, such as the following, by building up the patient's general nervous stability, may, however, help to control this sometimes very distressing habit :

R  
 Iron and ammonium citrate    ..    ..    ..    2 drachms  
 Tincture of nux vomica    ..    ..    ..    1 drachm  
 Chloroform water    ..    ..    enough to make 12 ounces  
 Make into a mixture. Take one tablespoonful three times a day after meals.

A cold bath every morning, if the patient reacts well to the shock (*see under BATHS*), is sometimes useful in these cases, toning up the blood-vessels and reducing their abnormal liability to dilatation.

**BOILS OR FURUNCLES.** A boil is caused by a germ finding its way into the sheaths of a hair in the skin and there setting up inflammation.

The predisposing cause is any temporary falling off in the patient's health. The commonest sufferers from boils are fat people who habitually "do themselves well"; who do not keep their bowels regular, or who are suffering from some chronic disease such as kidney degeneration or diabetes.

Any rubbing or chafing of the skin plays an important part in causing boils, because the outer protective layers of the skin-cells being thus removed, the causative germ is better able to gain access to the living tissues beneath. Hence the frequency with which the skin at the back of the neck, constantly rubbed by the collar, is the site of boils.

After increasing in size and soreness for two or three days the boil usually breaks, and a variable amount of matter escapes. In another day or two the central core comes away, after which the boil dries up, the dry scab peeling away a few days later.

**Treatment.** This must be both local and general. The patient should cut out all meats and alcohol and keep for a few days to a very light diet of milk and green vegetables.

The following tonic should be begun at once and continued for three or four weeks, as, unless the general health is speedily built up, a second boil or even a continuous crop of boils may follow :

R  
 Sulphate of iron    ..    ..    ..    36 grains  
 Sulphate of magnesium    ..    ..    ..     $\frac{1}{2}$  ounce  
 Dilute sulphuric acid    ..    ..    ..    2 drachms  
 Compound tincture of cardamoms    ..    ..    3 drachms  
 Water    ..    ..    ..    enough to make 6 ounces

Dose. Take a tablespoonful in a tumbler of water before breakfast.



Locally the boil itself and all the surrounding skin must be kept scrupulously clean. To prevent the germs from the boil attacking other parts of the skin, a little white precipitate ointment (which any chemist can supply) should be smeared over the adjoining skin each morning.

Several times a day the boil itself should be carefully sponged with a solution of one part of carbolic acid to twenty parts of water. Between sponging times a thin pad of cotton wool soaked in this solution, and then squeezed out fairly dry, should be placed over the boil and lightly kept in position with two or three thin strips of adhesive strapping.

If the boil is about the nostrils or in the ear, a physician should be seen at once, because it may seem best (to avoid the risk of infection striking inwards) to have the boil surgically treated without waiting for it to break naturally.

Sometimes if the boil in its earliest stages is surrounded with a piece of adhesive plaster as large as a shilling with a hole the size of a match-end cut in its middle, it will gradually subside in two or three days without coming to a head. The hole should fit accurately over the point of the boil.

**BOILS IN CHILDHOOD AND INFANCY.** Whereas in grown people over-eating, particularly of rich meaty foods, is a not uncommon cause of boils, the opposite state, one of impaired nutrition through under-feeding, may lead to succeeding crops of boils in infancy and childhood.

The neck and the regions about the buttocks are most commonly attacked, but series of boils may develop practically anywhere on the body. Because of their long duration (for no sooner does one heal up than another develops), the little patients may be brought to a very low state of general health.

**Treatment.** Where the child has suffered from successive crops of boils a change of air offers the best hope of immediate cure. Locally the treatment suggested above under boils in grown people may be tried; but often nothing seems to have any effect in shortening the duration of the individual boils.

The little patient's diet should be carefully looked to, and if there are any signs of under-feeding a more generous diet should be tried. The appetite should be coaxed with dainty dishes, if at all capricious. Minute doses of iron and strychnine often give good results. Easton's syrup, ten to thirty drops three times a day, after food, may be given here, or the following tonic mixture may be prescribed for a child of six to ten years :

R

Solution of ferric chloride	..	..	..	..	2½ drachms
Tincture of nux vomica	..	..	..	..	80 minims
Syrup of orange-peel	..	..	..	..	2 ounces
Water	..	..	..	.. enough to make	8 ounces

Make into a mixture. Take one teaspoonful three times a day after meals.

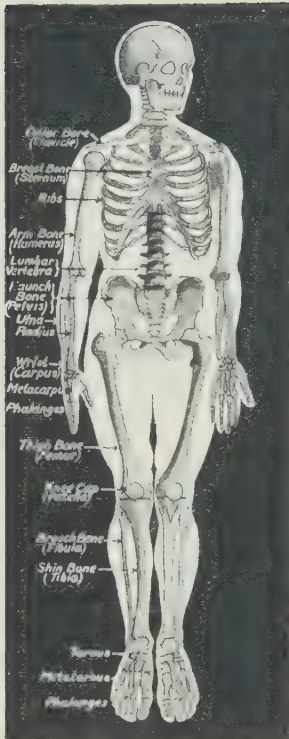


DIAGRAM OF THE PRINCIPAL BONES

More sunlight and more hours spent out of doors will also do much towards that building up of the general health which is such an essential factor in the cure of the boils.

**BOLUS.** A powder made into a thick past with honey. The bolus wrapped in a wafer paper can be easily swallowed, and is a convenient form in which to take a bad-tasting powder.

The three boluses most commonly used are :

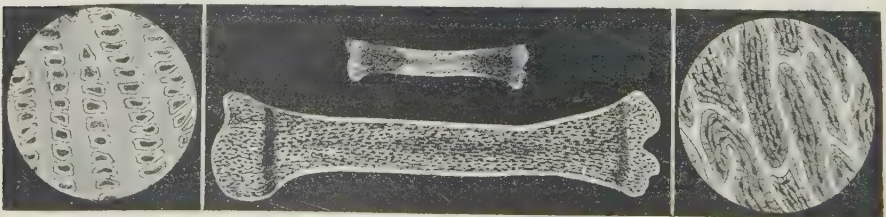
1. The confection of pepper, consisting of two parts black pepper, three parts carraway, and fifteen parts honey. Dose, sixty to one hundred and twenty grains.

2. Confection of senna, containing senna seven parts, coriander three, figs twelve, tamarind nine, cassia pulp nine, prunes six, extract of liquorice one, sugar thirty, water to make seventy-five parts. Dose, sixty to one hundred and twenty grains.

3. Confection of sulphur, consisting of sublimed sulphur four, acid potassium tartrate one, tragacanth one twenty-fifth, tincture of orange half, syrup two and glycerin one and a half. Dose, sixty to one hundred and twenty grains.

**BONE.** The bones of the body grouped together as the skeleton form the framework upon which all the other tissues depend. Bones are composed of varying amounts of chalky substance (carbonate of lime and phosphate of lime), together with dense fibrous tissue. In youth the fibrous tissue preponderates, whereas in old age the phosphate and carbonates of lime make up the bulk of the bones. Children's bones therefore, tend to bend and yield under pressure (because of the more or less elastic fibrous tissue), whereas the chalky bones of old age, which contain little fibrous tissue, break with extreme readiness.

Bone may also be subdivided into (1) hard bone, such as that of the shafts



CROSS-SECTION OF BONE CARTILAGE

SECTIONS OF THE BONE OF A CHILD AND AN ADULT

SECTION OF BONE Showing bone canals and bone cells

The dark portions are cartilage, the rest is bone.

of the long bones of the arms and legs, and (2) soft bone which makes up the rounded ends of the long bones. The small bones of the wrist, ankle, etc., are also formed of soft bone.

Hard bone consists of a brittle hard tube or pipe, the central cavity of which is filled up with fatty marrow, while its outer surface is covered by a tough membrane called the periosteum. The soft, or cancellous, bones are made up of fine honeycombing of bone, the cavities of which are filled with marrow.

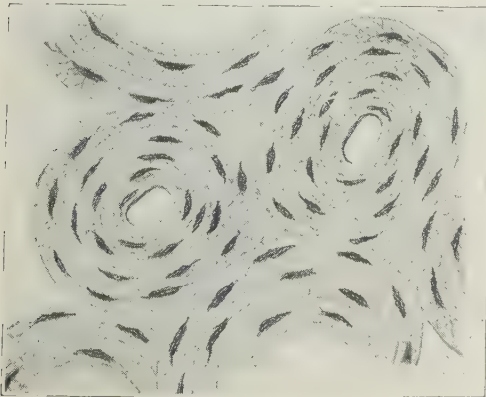
The bones, just as all the other tissues of the body, are supplied with blood by tiny vessels which, with nerves and lymphatics run through tiny channels in its substance (the Haversian canals).

**BONE DEVELOPMENT.** The long bones increase in width through the laying down of new bone cells under the periosteum, the dense fibrous sheath which covers them. Increase in length, however, takes place in the long bones at special growing centres, called the epiphyseal cartilages, situated a short distance from each end of the bone.

**BONE DISEASE.** Inflammation of the bones may be acute or chronic. Acute inflammations again may be subdivided into (1) those in which the covering membrane of the bone is chiefly involved (periostitis), (2) where the shaft of the bone itself is inflamed (osteitis); and (3) osteo-myelitis, where the disease is chiefly limited to the bone marrow within the shaft.



THE STRUCTURE OF THE LONG BONES



MAGNIFIED CROSS-SECTION OF HUMAN BONE  
Showing layers of cells and Haversian canals.

**ACUTE BONE INFLAMMATION**, which occurs chiefly in children, may follow any direct injury to the bone, as from a blow or a fall, or may be set up by bacteria which have found their way to the bone in the blood. The cardinal symptoms are great pain and tenderness





OUTWARD SIGNS OF BONE  
NECROSIS

over the whole course of the bone (with perhaps a certain amount of swelling), fever, and chills, and shivering. The skin over the bone may be reddened and angry-looking, and slight pressure with the finger over the diseased part may leave a little pit or depression in the skin, which remains for some moments after the pressure has been removed.

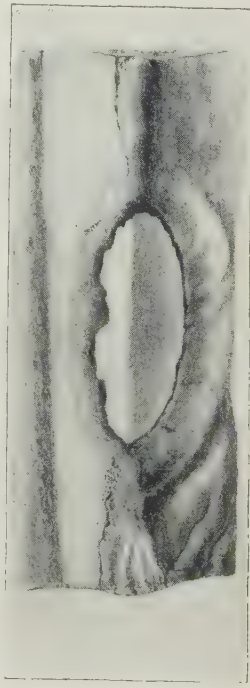
**Treatment.** No time should be lost in securing the surgeon's services, for unless the resulting bone abscess be speedily opened up and drained, severe and perhaps fatal blood-poisoning may result. As a rule, a portion of the bone dies (necrosis) and must be removed from the adjoining living bone by an operation, perhaps months after the original acute inflammation has died down.

**CHRONIC INFLAMMATION.** Here the bone disease runs a much slower and less painful course, and the fever and general symptoms are much less noticeable. Tuberculosis and syphilis are the commonest causes of chronic bone-inflammation. The chief symptoms (unless there is a discharging abscess) are a dull pain along the course of the bone which

gets markedly worse at night, and slight swelling. Where syphilis is the cause, bony knobs on the skin (due to previous syphilitic inflammations) and other symptoms of the original disorder will give the clue to the diagnosis. (*For treatment see under SYPHILIS.*)

Chronic ulcerative inflammation of bone, due to tuberculosis, usually affects the spinal column (caries of the spine), the hip and knee joints, or the small bones about the wrists and ankle. Swelling and a sensation of local heat may be noted over the seat of the disease, and later an abscess may "point" at this part and finally burst. A history of consumption in the family, a general rundown state of health, and other signs of tubercular invasion of the system are usually to be found to aid in the diagnosis.

**Treatment.** The treatment here is the same as in all other tubercular conditions. [*See CONSUMPTION.*] Plenty of fresh air, plain nourishing food, an iron



NECROSIS OR DEATH OF  
BONE



tonic or a course of cod-liver oil, and massage of the unaffected parts are essentials. A surgeon, of course, should be consulted, for any moment it may be advisable to open the forming abscess for the purpose of draining and scraping out the diseased part of the bone. Good results have been obtained in some cases by the surgeon's injecting into the seat of the abscess a strong emulsion of iodoform.

Where the hip bone is involved, permanent lameness and shortening of the leg may result. Where the bones of the vertebræ are attacked, spinal curvature or humpback may follow. Where a foot, knee, or hand is extensively disorganised by the disease, amputation may be necessary.

**NECROSIS OF BONE** means the death of a portion of a bone or a whole bone. It corresponds to gangrene of the soft tissues.

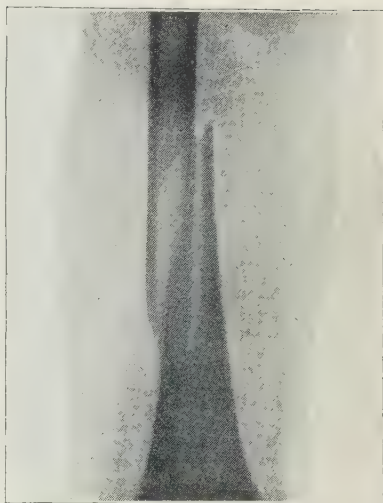
The common cause is a cutting off of the blood supply to the part. Phosphorus poisoning may also cause necrosis of the lower jaw-bone.

**Symptoms.** These closely resemble those of caries (ulcerative inflammation), except that the surgeon's probe gently inserted in the canal (sinus) leading from the skin wound down to the diseased area, meets hard, brittle bone instead of the crumbling soft bone of caries.

**Treatment.** In the early stages it is that of chronic abscesses. When the dead bone has loosened and separated off from the living bone, an operation should be performed to remove the dead bone.

**BONE FRACTURES.** A fracture may be (1) simple, where there is no break in the skin; (2) compound, where the force which has broken the bone has torn the tissues and skin; and (3) comminuted, where the break is not clean, but the broken ends are crushed and splintered.

Simple fracture requires only that the ends of the bone be brought into proper relation to each other, and kept at rest by splints until the ends grow together again.



FRACTURE OF THE THIGH BONE  
Radiograph by Mr. F. H. Glew.



FRACTURE OF BOTH BONES OF THE LEG  
Radiograph by Mr. F. H. Glew.

A compound fracture is a much more serious injury, because, as the skin and covering tissues are torn, germs may readily gain access to the wound. Also, because the skin is torn, there is likely to be a much greater loss of blood. A fourth variety of break, the un-united fracture, is usually due to the bones not being kept sufficiently quiet during the process of healing, the result being that a fibrous joint is formed, instead of an immovable bony union.

As we get older, our bones become more brittle, hence fractures are apt to occur in old people from trifling causes, such as slight falls, which would have no ill effect on younger, more elastic, bones.

The break may be due to *direct violence*, as where a leg is broken by being run over by a wheel, or it may be due to *indirect violence*, where the break takes place at some distance from the point where the violence is applied. A good example of this is the broken hip of an aged person who, stumbling on the stairs or over a rug, suddenly throws the whole weight of the body violently on one foot. Here the blow falls on the foot, but the break may take place in the thigh bone.

**Signs of Fracture.** Inability to use the part, deformity, swelling, shortening of the limb (if a long bone is broken), and an unnatural mobility of the part are the chief signs. The experienced surgeon, by gently moving the injured parts under his hand, may often elicit a sixth sign, crepitus or grating, due to the broken ends of the bone scraping against each other.

**Treatment.** As a general rule, when a fracture is suspected, it is much the safest not to attempt to move the patient until the doctor's arrival. Through unskilled handling, simple fractures are very easily converted into much more serious compound fractures, the sharp ends of the bone breaking their way through the overlying skin when the patient is being moved. If the fracture is a compound one, cut away the clothing and wash the part very gently with plenty of cold water, and then place over the wound a perfectly clean linen towel soaked in cold water, and bandage this in position sufficiently firmly to control the bleeding. If the bleeding is severe, a tourniquet may have to be applied above the part. A simple tourniquet is made by rolling a napkin or large handkerchief into a rope, and tying it as tightly as possible about the limb above the wound. This may be tightened further by slipping a stick between the limb and the towel, and twisting this round once or twice.

As very great deformity may result from the unskilled application of splints (even if union is obtained at all), the surgeon should always be called in as early as possible to apply the special support required in fractures of different locations. (*See FRACTURES and ANKLE, FRACTURE OF, etc.*) The time needed for healing depends on the bone broken, the age and condition of the patient, and whether the fracture is simple, compound, or comminuted.

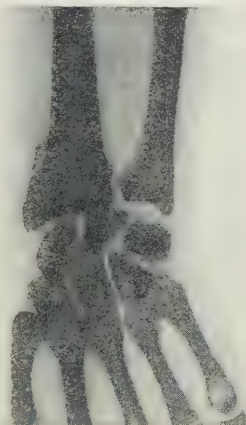
**Arm, Fracture of.** In children the bone is frequently not completely broken, the name 'green-stick fracture' being given to this type. In grown



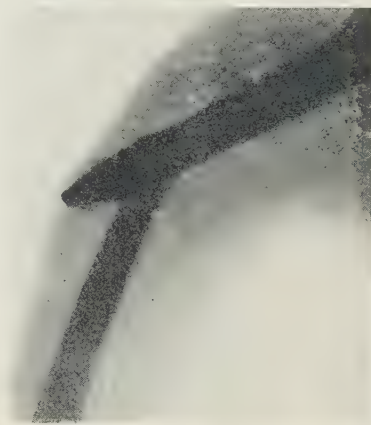
FRACTURE OF FOREARM BONE (RADIUS)



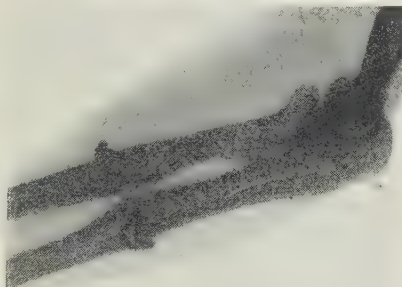
FRACTURE OF FOREARM NEAR ELBOW



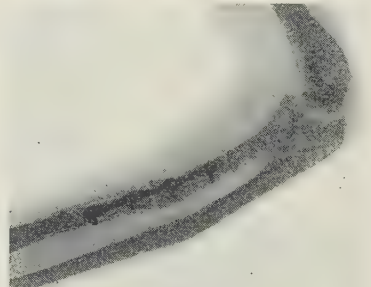
FRACTURE OF END OF FOREARM (RADIUS)



FRACTURE OF HUMERUS OR UPPER ARM



FRACTURE OF LOWER ARM BONES (RADIUS AND ULNA) WIRED



FRACTURE OF LOWER ARM BONE (RADIUS) REPAIRED WITH PLATE

#### FRACTURES OF THE ARM BONES AND THEIR REPAIR

The two radiographs at the top are from the London Hospital Museum. The remainder are by Mr. F. H. Glew.



A SARCOMATOUS CANCER ATTACKING  
LEG BONE  
From a drawing in Guy's Hospital Museum.

people the break, whether of the upper arm or of either of the lower arm bones, is usually complete.

The upper arm may be broken by a fall on the shoulder, hand or elbow, or may be the result of direct violence to the arm as from a blow. There is usually a good deal of deformity and an increased mobility of the part. Fracture of one or both bones of the lower arm may result from direct injury to the part, as from a blow, or it may be caused by a fall on the wrist or elbow.

The fracture of the lower end of the radius, commonly known as Colles' fracture, is the commonest of all fractures. *For treatment, see under FRACTURES.*

Because the arm muscles tend to pull the fragments out of place and thus often cause more or less deformity when simple splints are used, the bones in fracture of the arm are often fixed in position by wires wound directly round the broken ends or by metal plates screwed into the bone.

**BONE GROWTH AND TUMOURS.** Any sudden increase in the size of a bone, whether painful or not, should be immediately brought to the surgeon's notice. Such tumours may be of little account, or, on the other hand, they may be of a very deadly nature, requiring immediate amputation of the diseased part if the patient's life is to be saved.

**Bone Sarcoma** is the commonest and most important tumour which develops in the bony tissues. Two main types are described, that which develops in the marrow in the centre of the bone, and that which develops in the underlying layers of the dense fibre tissue, the periosteum, which covers the bone.

The type of sarcoma which grows in the central marrow of the bone develops slowly, and does not usually recur either in the same location or in some internal organ when once removed by operation.

The sarcoma developing from the periosteum, on the other hand, rapidly increases in size, and even though removed in the early stages is very apt to recur.



EPITHELIOMA CANCER ATTACKING  
BONE  
From a drawing in Guy's Hospital Museum.



The symptoms of bone sarcoma are continuous pain, which is usually worse at night, and gradual increase in size of the bone. Not infrequently, through the eating away of the bone, fracture may occur either spontaneously or from some very slight cause.

Treatment consists of the complete removal of the growth. If on a limb amputation at some distance above the sarcoma (if of the periosteal type) is usually necessary.

**BONE MARROW.** The fatty matter contained in the centre of bones. It is of two kinds: red marrow in the short bones and in some of the smaller long bones, such as the ribs, and yellow marrow in the long bones of the limbs. The red marrow is considered to be one of the sources from which the red corpuscles of the blood are developed.

Medicinally, red marrow from the bones of the ox is sometimes given as a remedy in the anæmias, especially pernicious anæmia. For a child of six to



CROSS-SECTIONS OF BONES SHOWING HEALED FRACTURES  
From drawings in Guy's Hospital Museum.

eight, the following iron, malt, and bone marrow mixture is sometimes a most valuable tonic in run-down, debilitated states, after infectious fevers, etc.:

R

Glycerin extract of red bone marrow	..	..	I ounce
Compound syrup of ferrous phosphate	..	..	I ..
Liquid extract of malt	..	..	I ..

Make into a mixture. Give one teaspoonful in a little water three times a day after meals. For children under five years give a small teaspoonful.

**BORACIC ACID OR BORIC ACID** is one of the most useful of the mild antiseptics. For soothing irritated and painful eyes, one part of boracic acid to forty parts water is a widely used lotion.

As a dusting powder, boracic acid, mixed with equal parts of powdered zinc oxide, is a valuable household remedy. For excessive perspiration of the feet, a powder containing one part of boric acid, two parts of starch, and two parts of zinc oxide, dusted into the socks each morning, gives excellent results.

**BORAX**, a sodium salt of boracic acid, is sometimes used in the form of glycerin of borax. One part of the glycerin of borax to three parts water is a useful antiseptic application for washing out the mouth in thrush.

A solution of one teaspoonful of powdered borax in four ounces of water sometimes is of great value in relieving the itching of the skin in pruritus.

**BORBORYGMI** are rumbling, gurgling sounds made in the intestine by the passage of gases and fluid. They may be a symptom of catarrh of the small intestine.

In neurasthenia and in old age they sometimes constitute a very distressing symptom, occurring shortly after meals or under the influence of emotion.

**BOT FLIES** are little parasites that burrow under the skin of the abdomen, scrotum, and other parts. They are found especially in South and Central America, and infest the skin of horses, oxen, goats and other animals.

**BOTHRIOCEPHALUS LATUS** (Fish tape-worm), is a tape-worm of great length, twenty to thirty feet, which develops in the human intestine as a consequence of eating diseased fish which has not been well cooked. The larvæ develop in the pike and other fish, chiefly in the waters of Switzerland, Russia, Holland, the German Baltic region, and Japan. The bothriocephalus is found in people of all ages, even in infants sometimes. They are not, as a rule, dangerous, but sometimes serious results ensue.

**Symptoms.** In some cases no inconvenience is caused, and no symptoms are apparent. But more commonly the host (the patient) becomes more or less run down in general health. The appetite is variable, sometimes almost absent, sometimes voracious. There may be nausea, vomiting, indigestion, pains in the abdomen, and alternating diarrhoea and constipation.

The patient may be greatly distressed in mind, anxious and melancholy, irritable and weak. He may suffer from noises in the ears, giddiness, palpitation, itching of the nose and anus, and convulsive seizures. Sometimes very severe anæmia develops.

The outlook is nearly always favourable.

**Treatment.** This is the same as for other forms of tape-worm disease. First starve the worm by giving the patient very light food for two days (milk, broths, weak tea, biscuits, a little bread).

On the second day, clear the bowels with an enema of a pint of warm, soapy water, followed by a saline purge, such as two teaspoonsful of Epsom salts.

Early on the third morning (no breakfast being taken), he should take one drachm of the liquid extract of male fern, followed two hours later by from half to one ounce of castor oil.

Pumpkin seeds are an old-fashioned, but often very efficacious remedy. Pound up in a mortar, until they are thoroughly bruised, about three ounces of the seeds. Then steep them in cold water for half a day or more. The entire quantity should be taken in the morning before breakfast, and should be followed an hour later by from one to two tablespoonsful of castor oil.

Below is an alternative mixture which may be tried if the above fail to destroy the worm.

R

Liquid extract of male fern .. .. .	1 to 2 drachms
Glycerin .. .. .	2 drachms
Syrup of orange-peel .. .. .	$\frac{1}{2}$ ounce
Compound tincture of cardamom <sup>1715</sup> .. .. .	2 drachms
Water .. .. .	to make 2 ounces

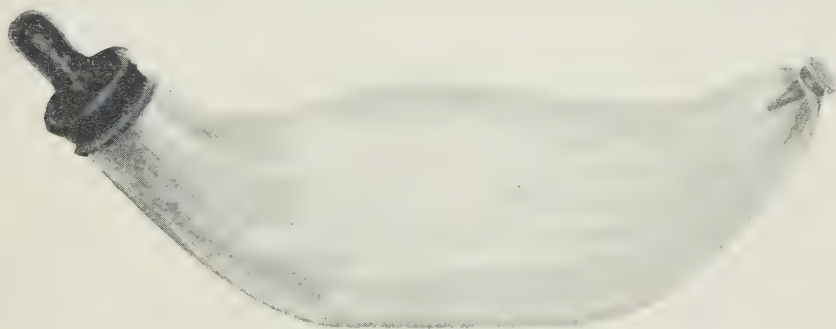
Mix.

Give half early in the morning; the remainder half an hour later. Then about two hours later give a purge of two to five grains of calomel and one drachm of compound liquorice powder.

Keep the patient in bed until the purge acts; then give breakfast.

It is not sufficient that portions of the body of the worm be brought away. Unless the head is also expelled the worm will develop again.

**BOTTLES, FEEDING.** On account of the practical impossibility of keeping rubber tubing clean and free from germs, the old type feeding bottle, with a length of tubing separating the bottle itself from the teat, should never



THE BOAT-SHAPED FEEDING BOTTLE

be used. The stale milk which is certain to accumulate in the hollow tubing—no matter how carefully it is washed—invariably becomes a breeding-place for disease germs which may set up serious diarrhœa, or even worse ailments.

Much the best form of feeding bottle is the modern boat-shaped bottle, in which the rubber teat fits directly on to the end of the bottle. The teat should be of good rubber, so that it can be readily turned wrong side out and thoroughly cleaned after each feeding. At the other end of the bottle there should be a rubber valve to allow the admission of air to take the place of the milk the baby sucks out through the other end.

The hole in the nipple should be large enough to allow the infant to draw out the milk without too much difficulty, but it should not be too large, or a habit of bolting its milk, with subsequent vomiting or indigestion, will develop.

It is best to have two bottles, one of which can be kept in a sterilising solution while the other is in use. After each feeding the teat and the rubber valve should both be removed, and, together with the bottle itself, be well washed, and then dipped in scalding water for a few moments.

The bottle, teat and valve should be soaked until next required in a solution containing half a teaspoonful of boracic acid to each pint of water.

Mothers frequently prefer the old-fashioned type of bottle with the long, flexible rubber tube, because when the bottle is left in the crib the baby can feed itself without further attention. Instead of being an advantage, this is one of the worst faults of the long-tubed bottle, for unless the baby's feedings are constantly supervised by the nurse and mother, carefully regulating the time it takes over each feeding, the infant may develop the very intractable habit of bolting its milk.

**BOUGIES** are rod-shaped instruments made of hard rubber or steel, and used for dilating passages. Thus, when the urethra is narrowed, obstructing the flow of urine, a bougie may be passed to dilate it.

**BOULIMIA, or BULIMIA**, means excessive appetite. The patient may awake in the night with a feeling of intense hunger, or the condition may come on soon after a good meal. Sometimes a small quantity of food satisfies the craving. In other cases enormous quantities of food are consumed so that the stomach becomes inflamed and dilated by the patient's excesses.

Boulimia is a common symptom in diabetes mellitus. Hysterical women are very much subject to it. It may also occur in some disorders of the digestion, in exophthalmic goitre, tumours of the brain, and epilepsy. The treatment is that of the ailment in which it occurs.

**BOW LEGS, or BANDY LEGS**, are usually due to rickets. In early cases in infants the active treatment of the disease (*See RICKETS*), combined with prolonged wearing of suitable splints, will usually cure the deformity. The legs should be first loosely bandaged from the ankle up to the crotch with a wide, soft flannel bandage. Then splints four inches wide, and carefully padded with cotton-wool, should be bandaged along the outside of the thigh and leg, so as to bring the bow leg back into the straight. The splints should extend well up above the hip joint, and some three or four inches beyond the sole of the foot. The object of this is to render it impossible for the child to get upon its feet. The splints should be worn during the day for a month or six weeks, or even longer.

The general health of the little patient must be kept at its best—even after the treatment for rickets is no longer necessary—by daily massaging of the muscles. He must have plenty of nourishing food—rich milk, butter, eggs, etc. To strengthen the bones themselves, some combination of phosphate of lime and iron, such as Parrish's Syrup, may be given.

Two or three hours in the open air every day on a stretcher bed or perambulator is an important part of the treatment. When finally the splints are left off entirely, the child should only be allowed on its feet for short periods at a time, and the effect of the body's weight falling on the limbs in standing and walking should be carefully noted. At the first



signs of any renewal of the bowing the splint treatment should be again resorted to.

In older children or adults where there is much deformity of bones hardened by age, the legs are sometimes straightened by operation. This rather severe treatment should never be contemplated except in cases of very pronounced deformity.

**BOWELS.** In the small bowel, or small intestine, about twenty-two feet in length, which extends from the stomach to the junction with the large bowel, digestion is completed. The large bowel, or large intestine, about five to six feet long, serves chiefly as a receptacle for waste and undigested matters until their expulsion. (See *INTESTINES*.)

**BRACHIAL** means belonging to the arm. Thus, in the upper arm we have the brachial vessels and the brachial plexus of nerves.

**BRADYCARDIA**, or **BRACHYCARDIA**, is an abnormally slow pulse. It occurs in some people without any corresponding disease, the pulse being naturally slow, and beating only sixty, fifty, or even forty times per minute. Generally, however, it is a symptom of some affection. Thus it may arise from ulceration, cancer, or chronic catarrh of the stomach, from jaundice, from excessive use of tobacco, tea, coffee, or alcohol.

Asthmatic patients sometimes suffer from bradycardia. The condition is also met with occasionally in anæmia, diabetes, and gout. It may accompany certain diseases of the heart, and may be present in meningitis, apoplexy, tumours of the brain, hysteria, and other nervous affections.

The pulse is often extremely slow during recovery from influenza, pneumonia, diphtheria, typhoid fever, acute rheumatism, and infectious diseases.

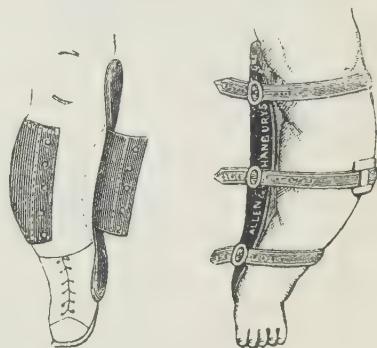
**BRAIDISM** is another name for hypnotism, so called after James Braid, who was one of the first to make use of it in medicine.

**BRAIN.** The brain consists of a large mass in front called the cerebrum, and a smaller mass behind, the cerebellum.

The cerebrum is divided along the middle into two parts, the right and left hemispheres, which remain united, however, by the corpus callosum, consisting of bundles of fibres which run from one hemisphere to the other.

The hemispheres are again imperfectly divided up into lobes by deep fissures. Shallower depressions, called furrows, or sulci, subdivide the surface of the lobes into convolutions.

Under the corpus callosum are the three ventricles, or cavities, of the cerebrum, which contain a watery fluid.



BOW-LEG SPLINTS

The mid-brain (mesencephalon) joins the cerebrum to the hind brain, which consists of the cerebellum, the pons Varolii, and the medulla, or bulb. This latter is continued into the spinal cord.

Three membranes cover the brain—namely, an outer tough one, called the dura mater; a middle one, called the arachnoid membrane; and an inner, very delicate one, containing a fine network of blood-vessels, called the pia mater. The spaces between the membranes contain fluid, and this, with the fluid in the ventricles, helps to protect the brain from harmful shock.

The brain is composed of a layer of grey matter which covers the surface, dipping into the fissures and furrows, and a mass of white matter consisting of nerve fibres, which lie underneath. On the quantity of grey matter, and therefore, in part, of the depth of the furrows, depends the intellectual power of the individual. Some of the fibres of the white matter carry messages from one part of the brain to another, others unite in bundles to form nerves which pass down into the spinal cord.

Springing from the brain are twelve pairs of cerebral nerves—namely, the sensory nerves of sight, hearing, smell, taste, and touch; the motor nerves of the eye, face, tongue, and some of the neck muscles; and the vagus, or wandering nerve, which sends branches to the larynx, lungs, heart and stomach.

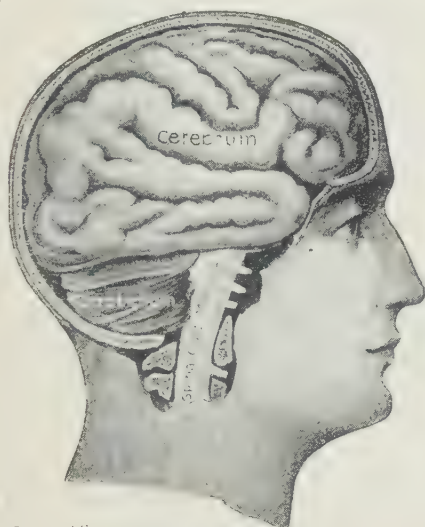
Different areas of the brain, called “centres,” have different functions. Thus there are “centres” for speech, hearing, seeing, movement, etc. In the medulla oblongata are situated the centres that control swallowing, vomiting, mastication, breathing, coughing, sucking, contraction of the blood-vessels, etc. A knowledge of these enables a doctor to tell what part of the brain is diseased or injured by the symptoms produced.

The average weight of the brain in men is forty-nine and a-half ounces, in women forty-four and a half ounces. Mere size of brain is no invariable index to intellectual power, but as a general rule the larger the organ is the higher the mental capacity.

The functions of the cerebellum or hind brain have never been clearly defined, but it is considered to bear an important part in the acts of balancing and the control of combinations of muscular movements as in walking. If the cerebellum of a bird be destroyed it is unable to keep its balance, and falls over.

**BRAIN DISEASES.** See under separate headings: *APoplexy, Embolism, Epilepsy, Headache, Insanity, Meningitis, and Paralysis, etc.*

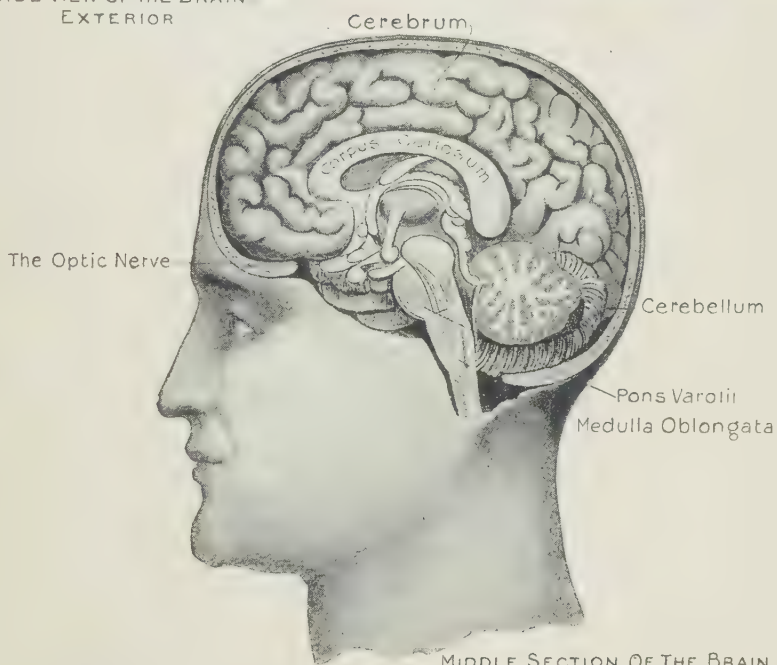
**BRAIN ANÆMIA.** Apart from the more serious conditions, an anæmia of the brain is described. Brought on by sluggish blood circulation through the brain-vessels due to heart weakness, the chief symptoms of brain anæmia are headaches, sleeplessness, and buzzing sounds in the head. Since overwork, combined with a low state of general health, is the chief cause of brain anæmia the treatment consists of giving up all mental work and leading



SIDE VIEW OF THE BRAIN  
EXTERIOR



TOP VIEW OF THE BRAIN



MIDDLE SECTION OF THE BRAIN

a restful, outdoor life for a few weeks until the system regains its normal tone. As a rule, no medicines are necessary.

**BRAIN ABSCESS** is one of the possible endings of chronic ear disease which makes a discharging ear such a dangerous complaint to leave untended. Brain abscesses may also be set up as a result of the extension inwards of the inflammation from an unclean scalp wound.

The symptoms are disturbances of vision, constantly recurring severe headaches, a low type of fever with perhaps sharp rises in temperature during the day, and persistent vomiting.

Brain abscess is a very serious complaint, the only treatment of any avail being an operation at the hands of a thoroughly competent surgeon.

**BRAIN COMPRESSION.** The compression may result from a splinter of broken bone pressing against the brain from the outside, from a collection of blood either between the skull and the lining membranes of the brain, or between these membranes themselves, or between the innermost membrane and the brain itself. A tumour or an abscess within the brain or within the skull on the outer surface of the brain may also cause compression.

**Symptoms.** Paralysis, perhaps descending down one whole side of the body, deep unconsciousness, laboured stertorous breathing, unequal pupils and a fluttering, feeble pulse in a person who has received an injury to the head should always suggest compression. Where the compression is due to a mass of blood between the skull and the brain covering, the loss of consciousness and other symptoms may only develop gradually some hours after the injury.

**Treatment.** The only way of relieving the pressure when a mass of escaped blood or a portion of broken skull-bone is pressing on the brain is to cut away a portion of the skull with a trephine and to remove the clot or splinter of bone. A collection of pus or a growth pressing on the outside of the brain is treated in the same way.

If the pressure is due to a tumour within the brain, instead of deep unconsciousness and paralysis, the chief symptoms are severe headaches, vomiting, and eye troubles. The treatment here is that of brain tumours.

**BRAIN CONCUSSION** is the name used to describe the conditions resulting from a blow on the skull or a sudden shaking of the brain which, however, has not been severe enough actually to lacerate any of the brain tissues.

The concussion may result in nothing more than a slight headache, dizziness, and mental "fogginess" lasting for but a moment or two, or, in a severe case, may lead to complete loss of consciousness, continuing perhaps for many days.

Ordinarily, even in a severe case, the patient can be roused to a certain extent, though with difficulty, thus differentiating concussion from the deeper unconsciousness of apoplexy and uræmia (*see page 300*). Even if the patient can be made to speak he immediately becomes unconscious again if left to himself.



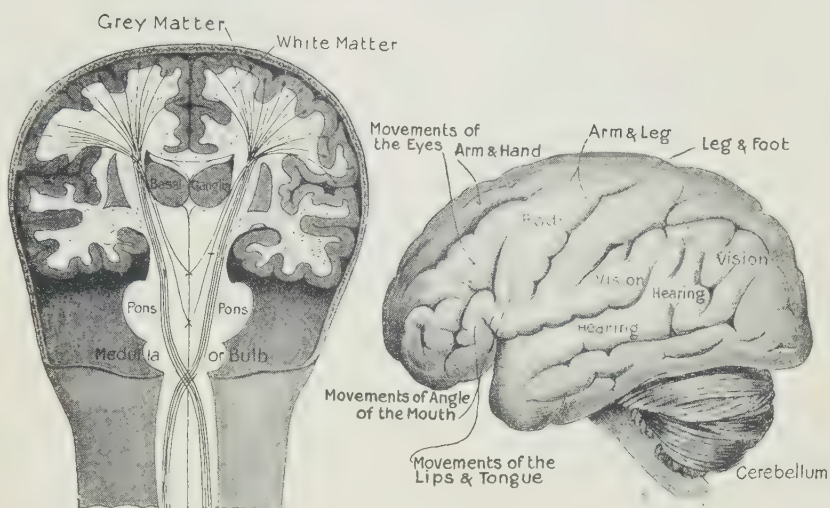
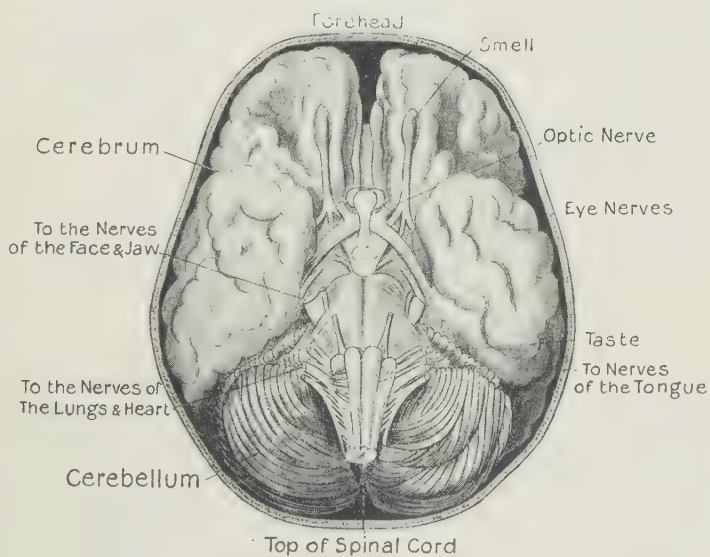


DIAGRAM OF THE CROSSING OF THE NERVE-FIBRES IN THE MEDULLA

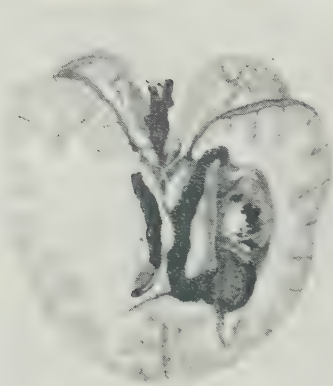
SIDE VIEW OF THE BRAIN SHOWING CONTROL CENTRES



BRAIN FROM BENEATH

#### THE CENTRES OF CONTROL IN THE BRAIN

The crossing of the nerve fibres in the medulla, or bulb (shown in the first diagram), on their way to different parts of the body, results in the left side of the body being controlled by the right side of the brain, and vice versa. The functions of the cerebellum are not clearly known.



BRAIN HÆMORRHAGE AFTER INJURY

From a sectional drawing in the Gordon Museum at Guy's Hospital.

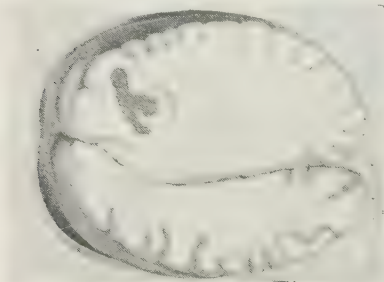


LACERATION OF BRAIN FROM SHOCK

The laceration is on the side of the brain, *opposite* the place where the injury was received.

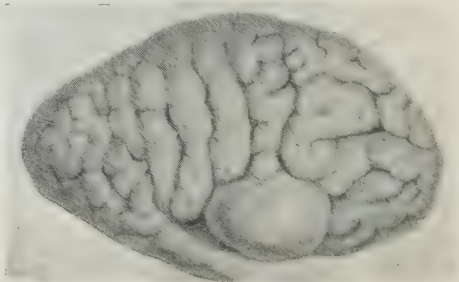
As a rule, recovery from concussion is complete, though it may be many weeks in a severe case before the patient can do his customary amount of mental work without headaches coming on or loss of memory. In some cases epilepsy has developed after a severe concussion, but usually in these cases there has been some degree of actual injury to the brain tissues, and not simply a mere shaking.

**Treatment.** The patient should be put to bed in a quiet room, and no effort should be made to rouse him from his unconsciousness. The activity of the kidneys and bowels should be looked to. The urine, if not passed at normal intervals, should be drawn off by a carefully sterilised soft rubber catheter, the strictest antiseptic precautions being taken to avoid introducing disease germs into the bladder by using a dirty instrument. If the bowels are not moved regularly each day throughout the period of unconsciousness, an enema of a pint of soapy water should be given every second day to flush out the bowel. If the patient is restless, an ice-cap to the head sometimes has a quietening effect.



BRAIN ABSCESS

Sectional drawing from Guy's Hospital Museum.



TUMOUR OF BRAIN CAUSING SPEECHLESSNESS

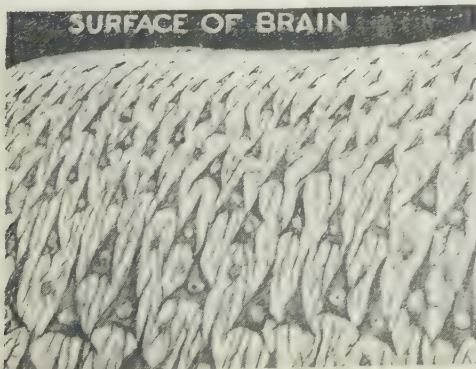
From a drawing in Guy's Hospital Museum.

If the patient can be roused sufficiently to drink fluids his strength should be kept up by two to four-ounce doses of milk every four hours. In severe concussion, however, where the patient is unconscious for several days or perhaps weeks, it may be necessary to resort to nasal feeding, a soft rubber catheter being passed through the nose into the stomach, and milk, meat-juices, etc., introduced through a funnel, or else nutrient enemata may be tried. (See page 122).

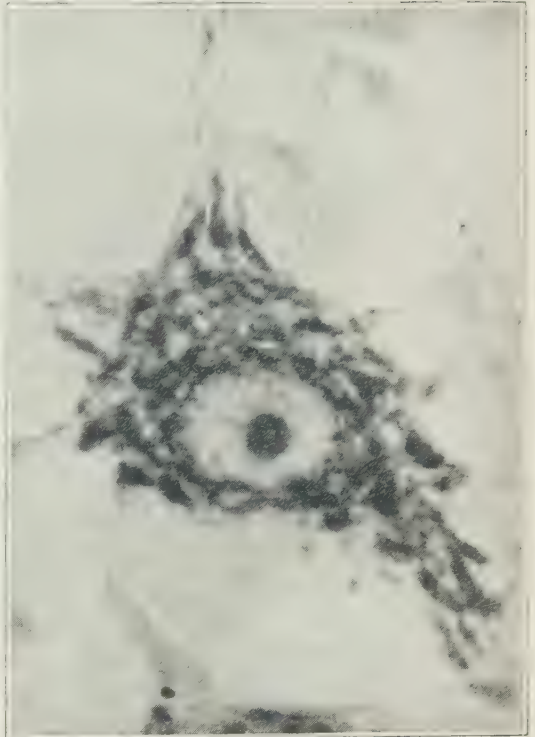
**BRAIN FEVER** is a vague popular term applied sometimes to meningitis (inflammation of the membranes covering the brain), and sometimes to great prostration consequent on mental or emotional strain. The "brain fever" of the novelists has no real existence. (See **MENINGITIS**.)

### BRAIN LACERATION.

Here, instead of being shaken only, the brain tissue is actually torn. Frequently the part of the brain lacerated is not that immediately under



SECTION OF "GREY MATTER" SHOWING NERVE CELLS



A BRAIN CELL

A micro-photograph of a highly magnified brain cell, stained to show its different parts. The cell is pyramidal in shape, with a large nucleus, in the centre of which is the nucleolus (stained). This is a psycho motor cell; that is, it is not concerned with automatic actions like breathing, but is a cell of active will.

the portion of skull injured, but instead is on the opposite side of the brain. Usually any injury which causes laceration leads to the tearing of important arteries, with the pouring out of blood into the tissues. The symptoms here, then, are practically the same as in compression of the brain.

### BRAIN SOFTENING.

Should an embolus or clot block up a brain artery, and so cut

off the blood supply, a softening may take place in the region affected.

The term "softening of the brain" is also sometimes used to denote the condition of childishness and lowered mentality, chiefly seen in old persons, due to the general blood supply of the brain failing as the result of disease of the arteries or old age. The term is also sometimes used to denote General Paralysis of the Insane, or Paresis.

**BRAIN TUMOURS** may be of cancerous, tuberculous, or syphilitic origin. The first are quite incurable, the tuberculous tumours sometimes become absorbed during the general treatment for tuberculosis, while the syphilitic tumours respond readily to the specific treatment for that disease.

The symptoms of brain tumour are similar to those of brain abscess, though there is usually little or no fever.

There is usually severe headache combined with vertigo and vomiting. Disturbances of vision which may go on to blindness are not uncommon in brain tumour.

**BRANDY**, when the pure product of the grape, is sometimes a useful heart stimulant. A great deal of the brandy sold in this country is, however, made by adding bitartrate of potash, ethers, colouring matter, etc., to inferior alcohol. This does not possess the medicinal virtues of real brandy, and may be injurious.

Unless genuine brandy can be obtained it is better to use a good whisky, if one must use spirits of any kind. (*See* ALCOHOL.)

**BREAD.** As bread forms about one-half of the food of the people it is of great importance that it should be of good quality.

The wheat grain consists of the endosperm, the germ, and the outer covering. The endosperm is mainly composed of starch with some protein and salts. It forms about 85 per cent. of the bulk of the grain. The germ contains protein and fat; it forms only  $1\frac{1}{2}$  per cent. of the whole grain. The bran contains cellulose, which is not digestible by human beings, and mineral matter; it forms about  $13\frac{1}{2}$  per cent. of the grain.

In white flour only the endosperm is used. In standard bread the germ and part of the bran are included. Wholemeal bread is made from the whole grain. Standard and wholemeal breads have, therefore, a larger proportion of protein, fat, and salts than white bread. These facts are important when deciding on the kind of bread to be bought for the family.

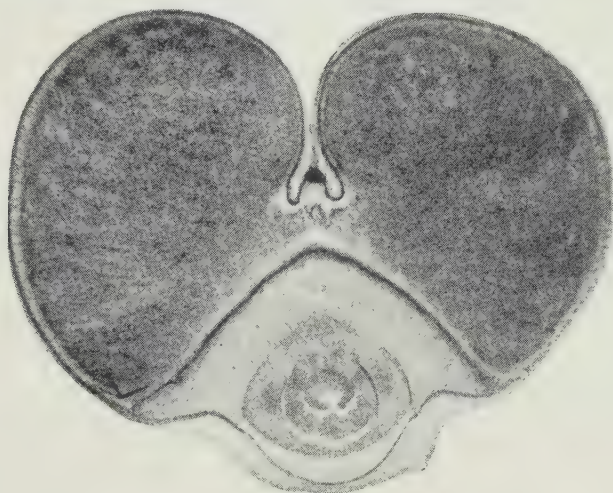
White bread, as a rule, contains too small a proportion of protein for the needs of the body. Of course, this deficiency can be made good by meat, eggs, cheese, etc., but when these cannot be afforded in sufficient quantity, very white bread does not supply all the material required for the growth of children.

On the other hand, ordinary brown bread and wholemeal bread have certain disadvantages. They contain all the protein of the wheat, but many people find them too irritating to the intestine. The bran is indigestible, and by over-stimulating the normal peristaltic action of stomach



and intestine it hurries on the whole of the food contents before they have been fully digested.

Standard bread has neither the faults of white nor those of brown and wholemeal breads. In preparing flour for standard bread the greater part of the bran is removed, while the entire germ is retained. Thus standard bread contains all the protein of the wheat, while it is not indigestible or irritating



CROSS-SECTION OF A GRAIN OF WHEAT

The outer covering, or bran, forms about  $13\frac{1}{2}$  per cent. of the grain; next, the endosperm, the floury portion, forms 85 per cent., while the minute germ is only  $1\frac{1}{2}$  per cent. of the bulk of the whole grain

from the presence of bran. It is therefore one of the most nutritious of all breads, and is especially suitable to growing children.

Other persons for whom standard is to be preferred to white bread are pregnant and suckling women, and people who cannot readily digest fats.

Whether white, brown, or standard bread is eaten it is best for most people when one day old. Very new bread is somewhat indigestible because it is not so thoroughly broken up in the mouth as stale bread. For this reason the saliva does not become freely mixed with new bread, nor does digestion in the stomach and intestine take place so easily, because the insufficiently masticated bread reaches those parts in doughy masses.

Very stale bread, however, is generally unwholesome. Bread three or four days old, if consumed for any length of time, may give rise to indigestion.

Bread of any kind is not a perfect food for man. It contains too large a proportion of starch, too small a proportion of proteid and fat. A perfect food should contain one part proteid to four parts carbohydrates (starches); not even standard bread approaches this ratio of proteids to starch. Consequently, if one lived on bread alone it would be necessary to eat twice as much starch as he required in order to get sufficient proteid. A two-

pound loaf would give an average man all the starch he requires for the day's work, but to get enough proteid he should eat a four-pound loaf. This fact is not at all important to well-to-do people, who eat largely of meat, fish, eggs, etc. But to poorer people it is a matter of great importance. Children fed on bread and tea are not properly nourished, even when they eat as much bread as satisfies their appetite. Nor does jam or butter or margarine or dripping supply the article in which the bread is deficient—protein.

It is necessary to give children (and adults) some food in addition to bread which contains a large proportion of proteid. Meat, fish, and eggs are the best; but, failing these, skimmed milk or cheese may be given. Or at one meal daily peas, beans, or lentils can be supplied.

A good and appetising loaf, which supplies in itself the necessary proteid material can be made with equal parts wheat flour, and peasemeal.

**BREAK BONE FEVER.** Another name for Dengue or Dandy Fever. It is a disease common in hot countries, of which the prominent features are high temperature, swelling, and pain in the joints, and an eruption on the skin. It lasts about a week, and there are usually from one to four relapses.

**BREAST.** In the male sex the breasts are rudimentary, while in the female they develop for the purpose of secreting milk for suckling.

The central darkish pink part surrounding the nipple is called the areola. This portion takes on a darker colour during pregnancy. The bulk of the breast is made up of a system of tubes, the milk from which, during lactation, is carried to the common orifice of the nipple.

The diseases peculiar to the breast are closely related to the changes which take place in the organ at puberty, during pregnancy, and suckling, and in their return to their original non-functionating state which takes place with the advance of old age.

**BREAST, DISEASES OF:** The breast is liable to suffer from inflammation, abscess, innocent tumours, cancer, and other diseases, some of which are of no great importance, while others are very serious.

Women are peculiarly nervous about disease in this part, imagining that every swelling or attack of pain indicates the growth of a cancerous tumour. This apprehensiveness is by no means an evil if it impels a woman to seek medical advice the moment a swelling appears, for cancer, if it is to be cured at all, must be taken in hand at the earliest possible moment. Even one week's delay may convert a curable into an incurable cancer. On the other hand, when a woman continues to worry herself about her symptoms without consulting a doctor, and having the case cleared up, she only does injury to her health. There are so many other less serious affections of the breast that the chances are always against cancer.

The common-sense plan, and the only plan that should be followed, when anything unusual is noticed in or about the breast, is not to worry at all, but



THE SENIOR WARD



THE CHILDREN'S WARD



A WOMENS' WARD



go at once to a doctor! He will relieve groundless fears; and, on the other hand, if serious disease is threatening he will take prompt measures for cure.

Hereafter the most common affections of the breast are described.

**ABSCESS OF THE BREAST** may occur at any time during suckling. It is caused by germs entering through some crack about the nipple.

The abscess may form in the region of the nipple when the signs are a rapidly growing lump in the breast, with vague discomfort and pain. Pain, however, is usually slight. In a few hours the skin over the pointing abscess becomes red and hot to the touch. At this point the skin may rapidly slough away, the abscess bursting and discharging through the resulting ragged hole.

When the abscess forms deeper in the substance of the breast a feeling of heat and tenderness is present for a day or two, and sharp pain is felt during suckling. Then the pain becomes of a throbbing character, and is more or less continuous, even when the mother is not suckling her child.

There may be chilly sensations all over the body, or a severe shivering fit. The temperature sometimes runs up abruptly (102 or 103 degrees). The skin over the breast becomes red, a tense swelling may be felt with the hand; and then as pus forms within, the redness deepens to a purplish hue, and the swelling softens. The pus may burrow in different directions and finally the skin, usually round the nipple, gives way and liberates the pus.

**Preventive Treatment.** After every feeding the breasts should be carefully bathed with a strong solution of boracic acid, one part of the acid to twenty parts of warm water. The nipple should then be carefully dried, and lightly dusted with talcum powder, or equal parts of powdered borax and zinc oxide. If the breast becomes tender the child suckling should be confined to the healthy breast, the tender one being emptied regularly, however, with a glass breast pump, such as any chemist can supply.

If the pain, hardness, and swelling of the breast increase the child should be weaned at once, and the flow of milk should be stopped by



DIAGRAM OF BREAST SHOWING MILK DUCTS

taking night and morning for two or three days a teaspoonful of sulphate of magnesium in a wineglassful of water. At the same time a belladonna plaster should be applied to the breast.

A physician should be called in at once, for if an abscess is forming much unnecessary scarring and burrowing can be prevented if the abscess is opened

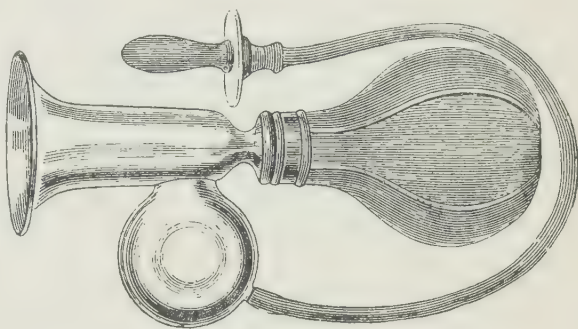


with a knife rather than allowing it to burst of itself. Where an abscess bursts or is opened by a surgeon, the cavity must be drained, packed with gauze, and allowed to heal from the bottom, as described under ABSCESS.

**A Retro-Mammary Abscess** is one which forms under the breast, between it and the muscle on which it lies. The characteristic symptom is the bulging forward of the whole breast, due to the pus forming behind it. The abscess should be opened early, otherwise it usually "points" at the lower outer margin of the breast.

A simple chronic abscess is of rare occurrence in middle-aged or elderly married women. There is some swelling and pain, and the glands in the armpit are usually enlarged. The abscess should be opened and drained.

**ACTINOMYCOSIS OF THE BREAST.** A disease caused by the ray fungus is occasionally met with. Its course closely resembles that of tuberculosis. [See ACTINOMYCOSIS.]



BREAST PUMP OR BREAST RELIEVER

## CANCER OF THE BREAST

Next to the womb, the breast is the most common seat of cancer in women. Three-fourths of those attacked are married women, and the great majority have reached or passed middle age. This disease never occurs before the age of puberty; it is extremely rare in young women, and indeed up to the age of 35 or 36. After the change of life it becomes more common and attains a maximum of frequency between the ages of 50 and 60 years.

Why the breast is so often the seat of cancer has not yet been explained very satisfactorily. Many reasons have been suggested, such as inheritance of a cancerous tendency from parents or grandparents, blows and other injuries to the breast, and tuberculous constitution. But there is no reliable evidence that any of these causes does produce cancer. Possibly irritation by friction of the clothing may have some causative effect.

One antecedent, however, is very common, namely, mastitis, or inflammation of the breast. That this affection may predispose to cancer by lowering the vitality of the tissues, is not at all improbable. Possibly also a fibro-adenoma, which is a common and comparatively innocent tumour of the breast, may favour the occurrence of cancer by irritation or may itself become cancerous.

In nearly half the cases the cancer occurs in the upper and outer quarter of the breast; the next commonest part to be attacked is the upper and inner

quarter. Six out of ten cancerous growths are found in the upper half of the breast. Two out of ten occur in and below the nipple, and the remaining two in the lower half of the breast.

Three forms of breast cancer (carcinoma) are recognised: (1) The medullary or encephaloid, which appears as a soft large tumour, and is composed mainly of epithelial cells; (2) Scirrhus, a hard tumour of moderate bulk in which dense fibrous tissue is largely mixed with the epithelial cells, and (3) Atrophic scirrhus, common in old people, in which the fibrous elements preponderate. Sometimes, however, an individual tumour is made up of all three varieties of growth. (See also CANCER.)

As a rule cancer of the breast begins as a single growth confined at first to a small area. But occasionally tumours may develop simultaneously in several parts, or the whole breast may be affected. (See ACUTE CANCER OF THE BREAST *below*).

Cancer of the breast in males is rare but not unknown. Of 100 cases 99 are in the female and only one in the male. It occurs mostly in old men, seldom before the age of 55 or 60. The symptoms, cause and treatment are very similar to those of cancer in women.

### SYMPTOMS AND SIGNS.

**SCIRRHUS CANCER, THE COMMONEST VARIETY.** Unfortunately the symptoms which call the patient's attention to the fact that something is wrong do not often appear until the disease has made considerable progress. Her notice is nearly always attracted for the first time by the discovery of a lump in the breast. Usually there is no discomfort and *no pain* in the early stages. Sometimes, however, twinges of pain are felt quite early. On the other hand, even the lump in the breast may not be noticed until one or more glands in the armpit have begun to swell.

The tumour is very hard and is fixed to the substance of the breast under the skin. At first the skin can be moved over it. But very soon the tumour and the skin become welded together. Then, and sometimes before, if the finger and thumb are placed on each side of the tumour and are drawn together so as to gather up the skin a very characteristic "dimpling" or "puckering" will be seen.

As the growth progresses the nipple may be retracted or drawn inward into the substance of the breast. This occurs in about one-fourth of the cases of cancer and is usually found only when the tumour is situated near the nipple. When adhesion of the tumour to the skin is established the skin may become hard and brawny and permanently wrinkled, to which condition the name "pig-skin" has been given. In some cases the whole of the skin over the chest assumes this leathery character (Cancer in cuirasse). As the tumour grows it becomes fixed to the muscles underlying the breast. Then

if the arm is raised and drawn backward it will be found that the breast cannot be moved in the direction of the fibres of the chest muscle (the healthy breast is so movable), although it can be moved at right angles to the fibres.

One of the most important signs of cancer is enlargement of the glands in the armpit on the same side of the body as the tumour. These glands first become harder and then larger. The first to enlarge are the glands on the lower border of the pectoral muscle (the large flat muscle which runs from the chest to the arm); then gradually all the glands of the armpit swell, and later those under the collar bone. The swollen axillary (armpit) glands may press on the vein which brings back blood from the arm, and so may produce extensive dropsical swelling of the arm. They may also press upon the nerves and give rise to intense pain in the arm.

Some time after the skin has been adherent to the tumour ulceration may begin. The skin cracks and a little fluid is discharged; a scab forms, but under this the process of ulceration continues, and a blood-stained or offensive discharge comes away.

Ulceration occurs most commonly about two and a half years after the cancer has been first noticed. (W. S. Handley.)

It is only, as a rule, when ulceration begins that pain in the breast becomes severe. It is of a stabbing or pricking character. In some cases there may be no pain of the breast throughout the disease.

In this scirrhus form of cancer the affected breast usually shrinks and is noticeably smaller and flatter than the other.

Wasting of the body and great loss of strength are prominent symptoms in the later stages of the disease, the patient eventually dying of exhaustion or blood-poisoning unless the malignant growth is removed.

**Prognosis of Scirrhus Cancer.** The fate of the patient will largely depend on whether she comes under the care of a surgeon early or well on in the course of the disease.

If the tumour is completely removed before adhesion to the skin and swelling of the glands in the armpit, the probability is great that the disease will not return. Recent statistics show that at least two out of three of such patients are permanently cured.

When the glands have swollen the prospects of cure are greatly diminished, and probably not more than one out of four of these patients is cured by the operation.

If extensive ulceration, or any of the other signs of advanced cancer are present, the chances of cure are much slighter. Even if the breast be completely removed, there is always the probability that off-shoots of the cancer have found their way along the lymph channels to some distant parts where they develop into what are known as secondary cancerous growths. As to how long a patient may live in cases where an operation would be

too late, nothing definite can be said. With a rapidly growing cancer the outlook is not so good in a young woman after the stage is reached which impels her to seek medical advice. In hard fibroid cancers, which grow slowly, she may live three or four years.

Occasionally, even in far advanced cases, a process of repair sets in and without treatment the patient recovers. Instances have been recorded in which cancerous ulcers have spontaneously healed, swollen glands have shrunk to their natural size, and even bones, fractured in consequence of the deposit of cancer cells, have united.

**ATROPHIC SCIRRHUS CANCER**, occurring chiefly in elderly women, does not run down the general health to the same extent as the foregoing variety. Until an advanced stage, it may be almost painless.

The patient generally first notices a puckering of the skin. The tumour is small and may after a time shrivel up and disappear. The nipple is drawn inward. The breast shrinks and may become so small as to be no larger than the male breast. Occasionally the skin over the tumour ulcerates and becomes covered by a scab.

**Prognosis.** The patient may live for many years without pain or loss of general health. But occasionally severe ulceration comes on or the cancer spreads to other parts and so destroys life.

**Treatment.** Some surgeons recommend that no operation should be performed; others advocate removal of the growth. The course to follow will depend very much on the age and health of the patient.

**MEDULLARY OR ENCEPHALOID CANCER** is a soft tumour which rapidly spreads through the breast. In this form the nipple is not retracted (drawn inward), nor is there any dimpling of the skin. The glands of the armpit swell quickly and soon may attain a large size. The skin adheres to the breast over a large area and may become of deep yellowish-red colour. Then it ulcerates and exposes a large fungus mass of tissue which bleeds profusely.

This form of cancer occurs most frequently in younger women, from 40 to 55. As a rule it is rapidly fatal, as operation is rarely performed before secondary growths in distant parts have begun to develop.

**ACUTE CANCER OF THE BREAST.** This is a rare form occurring in younger women and commonly developing during lactation (the suckling period). A large tumour suddenly forms, affecting the whole breast. The breast swells, and the skin becomes red and adherent. The nipple is sometimes swollen and sometimes drawn inward.

Soon the breast becomes covered with numerous cancerous nodules or bosses. The disease is quickly carried to the other parts, and the patient dies in from six to twelve or fourteen weeks. Sometimes this disease is mistaken for abscess of the breast.



There is no known remedy, removal by a surgical operation nearly always failing to prevent secondary growths developing in other parts of the body.

**DUCT CANCER.** The ducts are the small tubes, fifteen to twenty-four in number, which collect the milk from the different compartments of the nursing breast and open on the surface of the nipple. While cancer mostly originates in the cells which line the branching tubes deep in the breast in which the milk is actually formed, it sometimes develops in the collecting tubes or ducts themselves.

This variety occurs mostly in elderly women. The first sign noticed is usually a flow of the blood-stained fluid from the nipple. Then a small tumour is perceived, generally under the areola (the coloured circle round the nipple). The tumour grows slowly and rarely reaches a large size. The glands in the armpit may swell, but not in every case. The nipple is not drawn inward, as a rule. This form of cancer is not so dangerous as the common scirrhus cancer, growing more slowly and showing less tendency to recurrence after removal by operation.

In some rare cases cancerous growths in the breast may fail to show one or another of the common characteristics. While they are usually adherent to underlying structures, one may sometimes be found that is freely movable. Again a cancer may be present for some years, and even cause swelling of the glands, without producing a tumour that can be felt. Sometimes the tumour occurs in an outlying part, separate from the main body of the breast. This is often a dangerous form, as it quickly becomes attached to the chest wall, whence it spreads to the glands deep in the chest under the breastbone.

**SECONDARY GROWTHS FROM CANCER OF THE BREAST.** Cancer beginning in the breast nearly always spreads to other parts of the body unless completely removed in its early stages. The bones may be invaded, more especially the breastbone, the ribs, the spine, thigh-bone, upper arm-bone, collar-bone, and the bones of the head. When cancerous deposits are made in the long bones spontaneous fracture often occurs.

The disease also extends outwards under the skin, and in some exceptional cases nodules may form over the greater part of the surface of the body, the arms, legs, and head. Nearly always, however, the patient dies before this extension reaches the lower arm or below the middle of the thigh.

The liver, spleen, and other of the abdominal organs, and the pleura in the chest, are all common sites for the development of secondary cancerous growths following on cancer of the breast. Deposits in the brain are found in about four per cent. of cases of breast cancer. Late in the disease the other breast and its axillary glands may also become involved.

**Treatment.** The only treatment which has so far been proved to be successful is an early and extensive operation for removal of the diseased breast and certain adjacent parts. Radium, however, is at present giving very

hopeful results, but for some years to come it cannot be decided whether these are permanent or only temporary. (*See RADIUM TREATMENT under CANCER.*)

### THE NECESSITY FOR EARLY OPERATION.

With regard to the operation, the following facts cannot be too strongly impressed upon women :

If the operation is performed before the disease has advanced to a certain stage the chances are great that a complete cure will be effected.

Every day that the operation is delayed the prospects of a cure are diminished.

If the patient shirks the operation a stage is soon reached in which operative treatment offers little hope of cure.

Then, as the disease extends, a time comes when the surgeon can do nothing and will decline to operate. The instant, therefore, a woman perceives even the slightest lump in the breast or feels a twinge of pain she should go to a doctor, and have herself examined. She cannot go too soon. It is because most women go too late that the death-rate from cancer is so high.

The surgeon is usually guided by the rule that in every case where it is possible to remove the whole of the diseased parts an operation should be performed.

The cases which offer the best hope of success are those in which the lump in the breast is discovered before the glands have commenced to swell, or adhesion or dimpling of the skin has occurred.

But an operation is still of value in many cases, even where the skin and tumour have adhered, when dimpling has occurred, when the glands have swollen, the nipple has been drawn in, the tumour has become fastened to the covering of the underlying muscle, and the curve of the breast has flattened.

Other developments which greatly lessen the probabilities of success are extensive ulceration, severe pain in the breast, shrinkage of the breast, and the appearance of cancerous nodules in the surrounding skin.

Opinions differ as to whether an operation should be attempted when the glands just above the collar-bone have become enlarged or the arm is œdematous (swollen with fluid owing to pressure of glands in the armpit on a vein.)

The advanced cases in which an operation is practically foredoomed to failure are as follows :

When the cancerous growth has become firmly attached to the bones of the chest.

When nodules have appeared at some distance (two or three inches) outside the growth in the breast.

When the glands above the collar-bone are much enlarged and fixed.

When the secondary growths in the armpit have adhered to the underlying structures.

When deposits have occurred in the bones or internal organs.

Generally when both breasts are diseased.

In the atrophic scirrhus cancer of old women an operation may not be needed. In cases of acute cancer it is useless.

After an operation the use of X-rays or radium is sometimes of great service as a preventive against the recurrence of the disease.

The patient for months after the operation should take the utmost care of her general health, and spend as much time as possible in the open air.

**SARCOMA**, or connective tissue cancer of the breast, is a comparatively rare condition. It occurs most frequently in women between 40 and 50, but may affect females of any age, sometimes appearing even in childhood. Sometimes it apparently results from injury, as a blow on the breast. Again a small swelling which has been present for some time may begin to enlarge and develop into a sarcoma. Numerous cases have been reported of breast sarcoma in men.

A sarcoma grows very rapidly, as a firm tumour which soon involves the whole breast. The breast may enlarge to several times its natural size. Large veins are seen on its surface. There is no dimpling as in carcinoma (scirrhus cancer), the nipple is not drawn in, and the glands of the armpit are not so likely to become enlarged. After a time the breast becomes fixed to the underlying muscle coverings, the skin becomes congested, reddened, and finally gives way. Through the opening in the skin a mass of fungous tumour-tissue protrudes. This bleeds readily, and the patient may die from exhaustion through loss of blood. If the patient lives long enough, the disease not uncommonly spreads to the internal organs or the bones.

If pregnancy coincides with the development of the tumour the latter grows with even greater rapidity than usual.

**Treatment.** The only treatment is complete removal of the breast as early as possible.

**NIPPLE CANCER.** Cancer of the nipple is a comparatively rare condition. Its progress is similar to that of cancer of the breast, but ulceration occurs somewhat earlier.

**PAGET'S DISEASE** is a chronic eczema of the nipple associated with a cancer (carcinoma) of the underlying ducts which lead to the nipple. The eczema may be present for eighteen months or even two years before any signs of the cancer show themselves.

The ailment runs the same course as other carcinomata of the breast. The only treatment is complete removal of the breast at the first possible moment.

If a chronic eczema of the breast fails to clear up in a few weeks under appropriate anti-eczema treatment, the condition should be considered one of Paget's Disease, and the whole breast straightway removed, even if no well-defined lump or tumour can be felt in the body of the breast itself.

**BREAST, CYST IN.** A cyst is a hollow tumour containing fluid or semi-solid material.

Cysts sometimes form within solid tumours, owing to degeneration of their substance, but cystic tumours proper have an independent existence and, unlike the cavities within solid tumours, are lined by a distinct membrane. They occur in the breast in several forms. The hydatid cyst, due to a parasite, is of very rare occurrence. It has a tendency to suppurate, and it can seldom be accurately diagnosed without making an opening into it.

The more common varieties are called "retention" cysts and "involution" cysts. When one of the milk ducts has been closed as a result of inflammation it becomes dilated by the retained milk, and forms a galactoceles or "retention" cyst. This may occur during pregnancy or the period of suckling. The cyst increases rapidly, and may range in size from the bulk of a cherry to that of a hen's egg, or even larger. The milk within it becomes altered, and may be almost semi-solid in consistency. A soft tumour can sometimes be felt in the region of the nipple.

As a rule, there is no pain: the glands in the armpit do *not* enlarge, and the nipple is *not* drawn inward, as in cancer. Usually the swelling is soft and elastic, with a smooth surface, but sometimes lobulated. It generally grows slowly. It is not painful nor, as a rule, is there even tenderness of the part.

**Treatment.** If the cyst occurs during pregnancy or suckling it should not be interfered with. When the flow of milk ceases the tumour will probably disappear. But at the next pregnancy it is likely to reappear. If, however, it grows to a large and uncomfortable size, or if it occurs other than in pregnancy, it may be opened and swabbed out with a solution of chloride of zinc. Sometimes it is necessary to remove the lobe of the breast in which the cyst is located.

**Involution Cysts** are not infrequent at the change of life and in elderly women. They result from obstruction of the milk tubes. Several cysts may be present. They more frequently occur deep in the breast, and near its circumference than round the nipple, like the retention cyst described above.

Although the contents are fluid these tumours are usually quite firm and may be mistaken for solid tumours. They are small in size, ranging from the size of a cherry to that of a walnut.

**Treatment.** Removal by operation is the only curative treatment. If several tumours are present the whole breast may have to be removed.

**BREAST ENGORGEMENT** with retained milk sometimes occurs after childbirth, the breast becoming swollen and painful. This usually results from blocking of the ducts, or some imperfection of the nipples, or it may happen if the child refuses to suck. The mother may become feverish and suffer great discomfort.





THE CHAFFEY WARD, GUY'S HOSPITAL



THE ASTLEY COOPER WARD, GUY'S HOSPITAL

**Treatment.** Withdraw the milk with a pump. Cover the breast with cotton-wool, and support it with a bandage. It may be desirable to wean the child and to check the formation of milk by giving for two or three mornings one to two teaspoonsful of magnesium sulphate in a little water.

**BREAST, HYPERTROPHY OF.** Sometimes in a young woman the breasts steadily increase to a very large size, and cause much discomfort by their weight, although there is no pain. This enlargement is more common in tropical than in temperate countries. The treatment consists in strapping and bandaging the breasts and improving the general health.

Removal by operation is sometimes necessitated by the resulting discomfort.

**BREAST, INFLAMMATION OF,** may be acute or chronic. During the first few days of life an infant's breasts sometimes become infected. They swell, appear red, and are tender, so that the child cries if they are handled. This condition need cause no uneasiness. It subsides in a few days, and requires no treatment.

Again, at the age of puberty, the breast may be swollen and tender for a few weeks, and a little colourless thickish fluid may come from the nipples. This occurrence often causes anxiety to mothers, but it is of no importance. No treatment is necessary, but the breasts may be protected by covering them with cotton-wool and a soft bandage.

When milk begins to be formed after child-birth the breasts are liable to swell and become congested. This condition may pass into acute inflammation, which results in the formation of an abscess. It is described above under that heading.

**Chronic Inflammation** of the breast is often the cause of intense discomfort and even severe pain, which may occasion much loss of sleep. Many women worry themselves into ill-health over this condition, persuading themselves that the slight swellings noted in the contour of the breast are the forerunners of cancer.

Chronic inflammation of the breast sometimes occurs in women under forty, but more commonly at the approach of the change of life, both in women who have and who have not borne children. The tumour is hard, but not of the extreme hardness of scirrhus cancer. Sometimes the nipple sinks inward as in cancer, but there is no dimpling of the skin such as occurs in the latter disease. Usually one of the early symptoms is a feeling of fulness and discomfort in the breast. Later there may be stinging pain, often very severe, which may extend to the armpit, the shoulder, and down the arm.

Pain is usually increased during the menstrual period. As the glands in the armpit become enlarged and painful, this condition of chronic inflammation is liable to be mistaken for cancer, but while a cancerous tumour can practically always be felt on pressing the flat of the hand upon the breast, no tumour can thus be felt in chronic inflammation.

The disease, in some cases, lasts for years, resulting perhaps in the formation of a number of cysts. Only occasionally does it pass into cancer.

**Treatment.** In the early stages ointment of belladonna applied to the breast, and a snug-fitting bandage to prevent dragging (*see page 184*) will usually give relief. If a syphilitic cause is suspected anoint with mercurial ointment.

The application of oleate of mercury on a piece of lint in which a hole is cut for the nipple, the breast being then firmly bandaged, together with some such tonic mixture as the following, containing iodides, is highly recommended in chronic inflammations of the breast: (T. Crisp English.)

R

Sodium iodide	..	..	..	..	..	72 grains
Potassium iodide	..	..	..	..	..	72 "
Tincture of nux vomica	..	..	..	..	..	2 drachms
Peppermint water	..	..	..	..	..	to make 12 ounces

Make into a mixture. Take one tablespoonful with half a glass of water three times a day after food.

When the disease persists in spite of treatment the surgeon should make an exploratory incision, and if there is any suggestion of cancer he should at once remove the breast.

**BREAST, NEURALGIA OF,** also called mastodynia, is often very severe in young women of an anæmic and nervous type. The breast is especially tender and painful at the periods of menstruation, shooting, burning pains being felt and the slightest touch being unbearable. The patient is usually very apprehensive of cancer, and should set her fears at rest by consulting a medical man. This affliction is also troublesome at times in pregnant women, and in those who suckle their children for overlong periods.

**Treatment.** For young women in a low condition general tonics and change of air are the best remedy. Rest in bed for a week or longer is often very serviceable. A month at a sanatorium will prove a cure for most cases. The diet should be digestible and nourishing, the patient should be as much as possible in the open air, and every effort should be made to build up her strength.

While these general measures are being carried out a belladonna plaster and a supporting bandage should be applied to the breast. In both young anæmic and pregnant women bathing the breast with hot water often gives some relief. Rubbing the breast with olive oil or menthol liniment is also a good measure, or the following ointment may be used:

Vaseline	..	..	..	..	..	..	1 ounce
Cocaine	..	..	..	..	..	..	5 grains

Instead of, or in addition to, supporting the breast with a bandage it is sometimes an advantage to strap it with menthol plaster.

Electricity has been used with good results in obstinate cases, one pole being placed over the painful area and the other on the spine.

**NIPPLES, CRACKED.** Strict cleanliness, frequent bathings with a 1 in 40 solution of carbolic acid, and the application from time to time of a little carbolated vaseline comprise the treatment. As in inflammation of the breast or threatened abscess the child's suckling should be confined to the healthy breast, the milk in the affected organ being drawn away regularly twice a day with a breast pump.

In some women the nipples are very small or depressed, causing difficulty in suckling. The breast-pump should be used to draw the nipple forward.

**BREAST, STRAPPING.** Where the breast is inflamed or painful much relief can be obtained by supporting it with a strapping.

The ordinary adhesive strapping, which can be obtained from every chemist, will do nicely here. The straps should be two inches wide and two and a half to three feet long. An assistant standing above and behind the patient should gently raise the swollen and tender breast, while the operator standing in front applies (adhesive side down) one end of his strapping just above the top of the shoulder-blade on the opposite side of the back.

He then brings the strapping forward across the sound collar-bone well under the swollen breast, under the armpit and around to the top of the shoulder on the sound side again. The second strap overlaps the upper edge of the first, and should be put on in the same manner. Four or five straps covering the breast almost up to the nipple are usually required to give firm support to the breast. (*See also* BREAST BANDAGE, *pages* 184 *and* 187.)

**BREAST TUBERCULOSIS** is rare. The time of life when it is most likely to occur is between the ages of twenty-five and thirty-five. It develops insidiously, and as there is no pain the disease may escape attention until it has made considerable progress. The breast swells and becomes somewhat lumpy. Then softening may occur in different areas. Finally the skin breaks at several points and sinuses (narrow channels leading to the diseased area) are formed on the surface of the breast.

The treatment is the general treatment of tuberculosis. Sometimes it is necessary to remove part or the whole of the breast.

**BREAST TUMOURS.** As the diagnosis between a low-grade chronic inflammation, a perfectly harmless growth, and a most malignant cancer is such a difficult one in early cases even for the practised surgeon, any lump, swelling, or hardening of the breast should at once be brought to the surgeon's notice.

If, as is usually the case, the matter is of no importance, no harm has been done. On the other hand, if the growth is really a cancer every moment of delay before it is removed lessens the patient's chance of a successful operation. Surgeons, in fact, are constantly having to refuse to operate on patients who have waited until their cancers are utterly hopeless before they have taken the trouble to ask a doctor's opinion of the nature of their trouble.





A WARD AT THE PARK HOSPITAL



SINGING LESSONS IN HOSPITAL



THE ROYAL WATERLOO HOSPITAL



A ROCKING HORSE AT THE VICTORIA HOSPITAL



IN THE CHEYNE HOSPITAL FOR CHILDREN, CHELSEA

Besides the malignant growths (*see* BREAST, CANCER OF, *above*) there are several kinds of innocent tumours.

**Adenoma**, or innocent glandular tumour, occurs in several forms. The most important is the fibro-adenoma, which may be soft or hard, according as it is composed largely of glandular substance or of the harder fibrous framework tissue.

The latter, the hard variety, is the tumour most frequently met with in young unmarried women between the ages of twenty and thirty years. It is usually small, about the size of a pigeon's egg, forming a swelling of round or oval shape. It is freely movable, can be raised from the breast substance, or pushed into it, being attached neither to the skin nor to the underlying muscle.

When the tumour is moved the nipple does not sink inward, and there is no swelling of the glands in the armpit. These two signs distinguish it clearly from cancer. Adenoma is usually quite painless.

The softer, or pure adenoma, resembles the fibro-adenoma here described, except that it is of softer consistence and usually grows to a larger size.

Other forms of adenoma are the adeno-sarcoma (cancerous), occurring usually in older women, and the adeno-cystoma, a fibrous tumour containing cysts, which occurs chiefly in women between forty and fifty and frequently attains a considerable size. This latter variety may occasionally become malignant.

For all forms the treatment consists of removal by the surgeon. The earlier this is done the less deformity will be caused to the breast.

**Duct Papilloma.** This is a tumour growing from the walls of the milk ducts. It occurs principally in women who have suckled many children, especially when the suckling has been continued for a long time. The tumour is felt in the region of the nipple, being of small size and firm consistence. The first sign, which may appear some time before a tumour can be perceived, is usually a discharge of fluid from the nipple. Sometimes the discharge is clear, sometimes tinged with blood. There is a tendency to ulceration, and sometimes the growth becomes cancerous. A single tumour should be removed, together with some of the surrounding tissue.

The following innocent (non-cancerous) tumours sometimes occur, but are exceedingly rare.

**Lipoma.** A soft tumour consisting mainly of fat. It causes no pain, grows slowly, and only becomes irksome if it attains a large size.

**Chondroma.** Composed of cartilage. Growing most commonly from a bone, but occasionally in the breast, it is very hard, usually requires no treatment, but may be removed if it causes inconvenience.

**Angioma**, a tumour composed of blood-vessels, the common naevus or "mother's mark." This rarely requires any interference.

**Osteoma**, a hard, bony tumour. Very rare in the region of the breast, and not usually requiring removal.



THE DISPENSARY



ONE OF THE OPERATING THEATRES



ONE OF THE GENERAL WARDS



ANOTHER WARD SCENE



**BREAST FEEDING** should be always carried out in preference to bottle feeding unless there is some grave reason to prevent it. Despite the common belief that a woman has to be more than ordinarily sturdy to feed her child, statistics show that not three women out of a hundred are physically incapacitated from nourishing their infants in the way Nature intended.

Naturally human milk is the most perfect of all foods for human infants. An infant whose stomach, prepared by Nature for the digestion of human milk, is made to adapt itself to an artificial substitute, such as cow's milk, is starting life under what may be a serious handicap.

Not only is human milk much more digestible than cow's milk, but it is absolutely free from disease germs except in very rare instances.

Although no actual milk is secreted for the first forty-eight to seventy-two hours the infant should be put to the breast for a few minutes three or four times during each of the first two days. A fluid called colostrum is drawn from the breast by the suckling infant, and this affords him what little nourishment he needs before the milk comes, and at the same time has a valuable laxative effect. The act of suckling also has a valuable reflex action on the muscular fibres of the mother's womb, encouraging its contraction and diminishing the chances of hæmorrhage.

When the flow of milk is established (usually on the third day), the infant should be put to the breast at two-hour intervals from early morning until late at night. In addition some authorities recommend that there should be two feedings during the night. Others, however, hold that after the first month no night feedings at all are required.

Each feeding-time should last about ten minutes, and strict punctuality of feeding should be the rule.

After six weeks, if two night feeds have been given, they may be reduced to one. At the end of three months the night feeds should in all cases be discontinued entirely, the infant going from ten-thirty or eleven at night to six-thirty or seven in the morning.

Unless the physician in charge decides that the child is not gaining weight properly, no other food of any kind should be given beyond the mother's milk.

Strict punctuality of feeding times cannot be too strongly emphasised. The infant should be put to the breast at these times whether it appears hungry or not; it will soon develop the invaluable habit of being hungry at the correct hours. If the infant is asleep it should be awakened at feeding-time. On the other hand, no matter how it cries or screams, it never should be pacified by being given the breast between times. There is always a great probability that the child's crying is the result of indigestion rather than hunger, so an extra feeding often only makes matters worse.

Ten to fifteen minutes is sufficient for each feeding time. Where the flow is abundant and easy the mother should prevent the infant's suckling too fast



by slightly pinching the nipple between the fingers while the baby is at the breast. The presence of the fingers, besides narrowing down the opening in the milk duct, will prevent the infant from exerting too powerful a suction.

Whereas practically every woman who is not an absolute invalid is strong enough to suckle her child with great advantage to its health, the quality of her milk may be temporarily altered by a number of different conditions. Sudden fright, a great sorrow, intense worry, great physical fatigue and the eating of certain foods (differing widely in different cases) may greatly alter the quality as well as the quantity of the mother's milk.

Any sudden cessation in the infant's normal gradual gaining of weight should immediately direct suspicion towards the mother's milk. Her diet may be too scanty. A greater abundance of plain, nourishing foods, with perhaps a few glasses of rich creamy milk during the day may be all that is needed speedily to bring the breast milk back to the normal.

The child's sudden fretfulness at the breast, when apparently ravenously hungry at the start of the feeding, strongly suggests that there is some change in the quality of the milk which is not to his liking. If the mother's milk is deficient in fat the infant, besides failing to increase in weight normally, may be greatly troubled by flatulence. Here less muscular exercise during the day for the mother, and a more generous diet with plenty of rich milk and readily digested fatty foods (bacon, butter, etc., and perhaps a tablespoonful of cod liver oil emulsion and malt extract three times a day), should soon set things right. Sometimes where the deficiency in fat is constant in the mother's milk, a teaspoonful of lactagol in a little milk three times a day will greatly improve the quality and amount of the milk secreted.

Again indigestion may be caused by the mother's milk being too rich and fatty. Here more outdoor exercise and an increase of lean meats and green vegetables in her diet with a cutting down of the amount of fatty and starchy foods may be tried, or a grain or two of sodium citrate dissolved in a teaspoonful of water may be given the infant each before feeding time.

A large number of drugs, including belladonna (whether taken internally or applied locally as on a plaster) and Epsom salts and other purgatives, etc., sometimes greatly affect the quality of the mother's milk. The nursing mother, therefore, should never take any drugs or medicines without first finding out from her physician whether they are likely to be excreted in the milk, with perhaps a serious effect upon the child.

Under certain rare conditions the mother should not attempt to suckle her infant. In a very small proportion of cases she may be of such a generally feeble constitution that the slight drain on the system may be too great a risk to her health. Again, if she is suffering from any fever, whether from child-bed fever or acute disease, breast feeding should be discontinued. Consumption in the mother is an unanswerable argument against breast feeding.

Sometimes the return of the monthly period has an adverse effect on the milk, upsetting the baby appreciably. As a rule it is best to wean at once in these cases rather than to try to change the quality of the mother's milk by giving her special foods.

Generally speaking the infant should be fed at the breast for nine months and then weaned. If, however, the end of this nine months falls in midsummer or when there is much infantile cholera or "summer complaint" about, it is better to continue the breast feeding for another month or even two months until the colder weather comes.

This, of course, is dependent on the mother's being able to continue to furnish sufficient nourishment as shown by the infant continuing to gain weight satisfactorily. The time chosen for weaning should be one when the infant's system is not temporarily lowered by any cough or fever or teething troubles.

If the baby is kept at the breast longer than nine or ten months, rickets or marasmus is very likely to develop from its not obtaining sufficient nourishment.

**BREAST PANG.** A popular name for Angina Pectoris. (*See under this heading.*)

**BREATH, BAD.** The common causes are indigestion, constipation, chronic catarrh, and decaying teeth. Treatment consists of removing or bettering the primary causes of the foul odour of the breath. Until this source of the trouble is removed, the use of breath lozenges, etc., cannot possibly remedy the affliction.

**BREATHING EXERCISES.** When the chest is ill-developed, its capacity can sometimes be greatly increased by suitable exercises. In cases of asthma, adenoids, neurasthenia, in some forms of heart disease, and in indigestion arising from deficient muscle power of the stomach or dilatation of that organ, they are often useful.

Very often consumption may be warded off in predisposed people by systematic breathing exercises. But when this disease has developed, the lungs want as much rest as possible, and so, as a general rule, breathing exercises should not be practised in this case without medical advice.

For middle-aged and elderly people with inelastic, hardened arteries, breathing exercises are extremely risky, especially those in which the breath is held after a deep inspiration.

For people in perfect health they are quite unnecessary, and probably quite useless. There is a common belief that by breathing deeply one fills the lungs with life-giving oxygen, and benefits the whole bodily system. This is a complete delusion. The body needs only sufficient oxygen for the combustion that takes place in the muscles, etc., during their action. It cannot make any use of more. What happens, therefore, when one takes a deep breath, is that the extra



BREATHING EXERCISES 1 AND 2



BREATHING EXERCISE 3



BREATHING EXERCISE 4

(For details, see page 294).

oxygen remains in the lungs and blood until it is wanted. The next breath is therefore delayed. Suppose one were to take a dozen deep breaths in an hour ; he would need fewer ordinary breaths than the normal number, and at the end of the hour he would have taken in no more oxygen than if he had breathed all the time in the usual way.

Deep breathing, however, stimulates the flow of blood in the chest cavity. It also helps the movements of the stomach and intestine, and it increases the range of movement of the chest. The value of this last effect is that in running or other exertion, the lungs are better able to meet the demands made upon them.

When breathing exercises are employed, the following rules ought to be observed :

See that the air of the room is quite pure.

Remove all articles of clothing that hinder the expansion of the chest or abdomen, such as belts, corsets, coats, vests, bodices, etc.

Stand in a natural, unconstrained attitude.

Practice the exercises preferably before dressing in the morning and after undressing at night.

Do not get chilled by cold draughts.

The following three exercises are very useful for developing the chest. Dr. Hutchison recommends them, especially in cases of adenoids :

Stand before a mirror and extend the arms horizontally to each side of the body, so that the hands are level with the shoulders, and the palms face the mirror. Inhale deeply, at the same time carrying the arms backward as far as possible. Then, while holding the breath and keeping the face steadily directed to the mirror, move the right arm and shoulder round until it points to the mirror, and the left arm in the contrary direction. Next swing the arms into the first horizontal position. Then empty the lungs. Repeat this exercise five or six times, reversing the movements of the arms. All through the exercise keep the head and the hips as steady as possible. (*See illustrations 1 and 2.*)

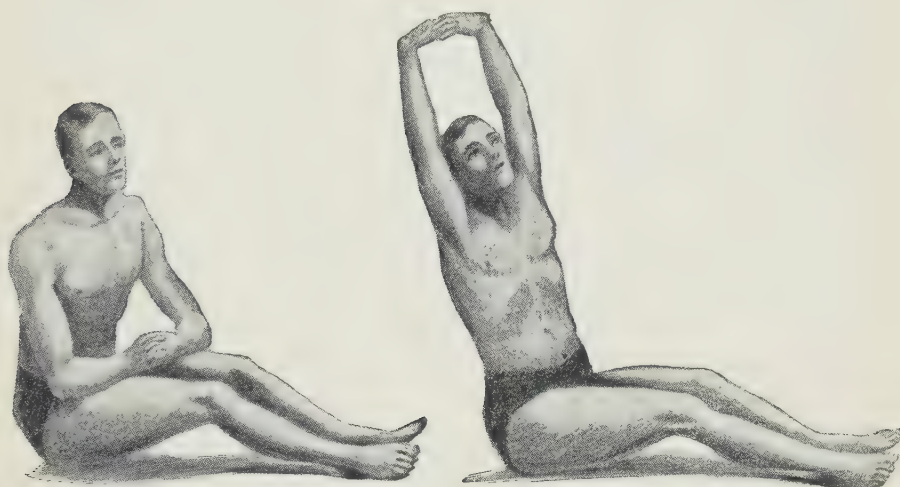
Stand quite straight, and press the hands on the lower ribs. Breathe out as deeply as possible. Then, keeping the hands pressed on the ribs, take a slow, deep breath. After a week press on the middle, instead of the lower ribs, and a week or two later apply the pressure in the armpits. (*See illustration 3.*)

Stand with the back to a wall. Slowly raise the arms as high as possible with the backs of the hands against the wall, and at the same time inhale deeply. While holding the breath, bend the arms until the hands are on a level with the shoulders. Then breathe out as deeply as possible. (*See illustration 4.*)

Dr. Harry Campbell classifies breathing exercises as active exercises, passive exercises, and exercises for developing the abdominal muscles. Among the numerous breathing exercises recommended by this authority are the following :

(1) Take the fullest possible thoracic (chest) inspiration, followed by an ordinary expiration.





BREATHING EXERCISE IN THE SITTING POSTURE

Fold the hands on the lap, bend forward and take a deep abdominal inspiration with mouth closed. Raise the body, lift the arms over the head, and take a full chest inspiration. Then, opening the mouth and dropping the hands, expire in the ordinary manner.

(2) Expire to the utmost, bending the body somewhat forward. Then take an ordinary inspiration, resuming the vertical position.

(3) Stand with the legs apart, and take a deep abdominal inspiration, followed by a passive expiration.

(4) Repeat this exercise, but instead of a passive, substitute a deep abdominal expiration, making an effort to contract the abdominal muscles.

(5) Assume the sitting posture, fold the hands on the lap, flex (bend) the body as far forward as possible. Now take the deepest possible abdominal inspiration, with closed mouth; then gradually raise the body, lift the arms over the head, and take the fullest possible thoracic (chest) inspiration. Then, opening the mouth and dropping the hands, expire in the ordinary passive manner. (*See illustrations above.*)

**BREATHLESSNESS.** Any lung affection which cuts down the amount of lung space available for breathing will, of course, bring on breathlessness. Breathlessness is also an early symptom of heart disease. In chlorosis and other forms of anæmia, where the blood is deficient in red colouring matter, breathlessness is frequently complained of.

**Treatment.** This depends entirely on the nature of the cause. For example, in anæmia an iron tonic should be given. (*See under the various headings ANÆMIA, PNEUMONIA, PLEURISY and HEART DISEASE, etc.*)

**BRIGHT'S DISEASE OR NEPHRITIS** is the name given to a whole group of kidney diseases, the symptoms of which were first described by a famous physician, Dr. Richard Bright, almost a hundred years ago.

Acute and chronic Bright's disease are described. In the former the changes in the kidneys are chiefly inflammatory, in the latter more in the nature of degeneration of the kidney substance.

**ACUTE BRIGHT'S DISEASE.** The disease, although it may occur at any time, is commonest in young adults and children. Those whose occupations keep them constantly out of doors in all kinds of weather account for most of the cases of acute Bright's disease occurring in grown persons.

The common practice of those constantly exposed to cold and wet attempting to keep themselves warm by drinking alcoholic spirits probably has much to do with the relative frequency of acute nephritis in young outdoor workers.

In the later stages or convalescence of practically any of the acute infectious fevers, particularly scarlet fever, acute nephritis may develop. In scarlet fever, the kidney involvement may suddenly take place at the height of the fever, though more often it sets in during convalescence.

Irritant medicines, either taken by the mouth or absorbed through the skin, may also set up an acute inflammation of the kidneys. Carbolic acid and iodoform, when used as dressings of wounds, are sometimes absorbed sufficiently to set up acute inflammation of the kidneys. Certain irritant drugs, such as alcohol, cantharides and turpentine taken by the mouth in poisonous doses, may also induce acute Bright's disease.

A special type of acute nephritis is not uncommon in pregnancy.

**Symptoms.** As a rule, the onset is fairly sudden. There may be a history of exposure to chill or alcoholic excess, or the ailment may come on with no apparent cause.

Severe pains in the back, with sickness, shivering, and perhaps one or two degrees of fever may be the first symptoms noted. Within a few hours the characteristic puffiness of the face and eyelids and pallor of the skin may be noticeable. At the same time the ankles and lower legs become "puffy," any pressure on the skin in these regions leaving a little pit, which remains for some moments after the pressure is removed.

The diagnosis can only be made certain by examination of the urine. This suddenly becomes scanty in amount and much darker in colour, both from its concentration and on account of blood mixed with it. The urine is usually highly acid, turns blue litmus paper red, and contains unmistakable amounts of albumin. (*See tests for ALBUMIN, page 52.*)

Under the microscope, red blood cells can be seen together with epithelial casts and blood casts. These "casts" are characteristic masses of blood and cast-off cells such as normally line the tubules of the kidney. In the course of

the inflammation of the kidneys the tiny tubes which make up their substance become swollen and blocked by accumulated epithelial cells, blood cells, and other products of inflammation. These little collections of thrown-off material, when they leave the kidneys and are passed out of the body in the urine, afford the greatest assistance to the physician in diagnosing the actual state of the kidneys.

Acute Bright's is always a very serious disease, because the inflammation of the kidney substance may totally stop the secretion of urine, the result being that the poisonous substances which normally are got rid of by the kidneys are retained in the system. The chief signs that poisonous materials which ought to have been passed out of the body are being absorbed are drowsiness and convulsions followed by unconsciousness which may end in death. (*See URÆMIA IN BRIGHT'S DISEASE*, page 300.)

In favourable cases the inflammation gradually subsides, and the kidneys slowly regain their power of filtering out from the blood the poisonous products, which is their chief duty in health. The symptoms of self-poisoning, or uræmia, pass off, the water is secreted in increasing amounts up to the normal, the fever and pain subside, and the patient gets perfectly well. In many cases, however, although the sufferer recovers from the acute attack, the kidneys never fully regain their normal health but remain in a chronically abnormal state, described under Chronic Bright's Disease.

In a severe case the puffiness and swelling, instead of being largely confined to the eyelids, face, and ankles, may extend over practically the whole body, the skin everywhere "pitting" on pressure. Intense headache and backache may develop, the amount of water passed may be still further diminished, the amount of albumin and blood and casts increasing. Finally, vomiting and convulsions may usher the patient into a state of deep unconsciousness known as uræmic coma, in which, unless it can be speedily relieved, death ensues.

The likelihood of complete recovery depends largely on the cause as well as the intensity of the kidney inflammation. Nephritis, due to exposure to cold after alcoholic excess, is more likely to be completely recovered from than is the nephritis of scarlet fever. (Anders.)

Grave symptoms are general puffiness over the whole body, uræmia, and any intercurrent inflammation such as pericarditis (inflammation of the heart's covering), pneumonia, or pleurisy. One of the worst symptoms of all is complete suppression of urine of twenty-four hours or more in duration.

**Treatment.** Acute Bright's disease must always be looked upon as a very serious illness indeed, because, although not often fatal in the first attack, it is very apt gradually to pass into chronic Bright's. Hence, if possible, a physician should be in constant attendance throughout the course of the disease.

In the first place, every effort must be made temporarily to lighten the work of the kidneys themselves, the skin, bowels, and lungs being pressed into service to take over the kidneys' usual duties. These are the abstracting from

the blood of the poisonous matters constantly being formed in the body from food in the process of digestion, and the normal wear and tear of the body.

The patient should at once be put to bed between woollen blankets. A woollen nightshirt should be worn, for the slight stimulation of the skin caused by the wool helps to keep the skin in a state of healthy activity.

During the whole attack milk should be the only food taken. Two to four ounces every two hours in the form of plain milk, milk-and-soda, junket (without nutmeg) or custard will supply the body's immediate needs for nourishment. Meat broths or juices of all kinds are prohibited, because their digestion throws extra work on the kidneys. Alcohol in every shape and form is poison to the sufferer from acute Bright's disease. He may, however, have as much as he likes of drinking water, orange-juice, or weak lemonade.

As there is usually a noticeable puffiness about the face and other parts of the body (showing that fluid is collecting in the tissues), the bowels should be immediately flushed out by half a teaspoonful of the compound jalap powder. Throughout the attack the bowels must be kept loose and free. For this purpose from two to four teaspoonsful of Epsom salts, dissolved in three table-spoonsful of water, may be given each morning on waking.

The next step in treatment is to stimulate the skin into taking over part of the disabled kidneys' functions. Twice a day as long as the puffiness lasts (once if the patient seems very weak), he should be given a "dry pack." Remove his nightshirt, and wrap him (great care must be taken to avoid chilling by exposure) in heavy woollen blankets which have been thoroughly warmed before the fire. He may now be given a drink of very hot lemonade. In five minutes' time the patient will usually be in a profuse perspiration. After twenty minutes in the dry pack the blankets should be deftly removed, the patient quickly dried, a fresh woollen nightshirt put on, and he should be placed between clean, dry blankets again.

In case the skin refuses to act under this treatment, a hot "moist pack" should be tried. Protecting one-half of the bed with a rubber blanket, covered with a woollen one, the patient should be gently lifted on to this, and then thoroughly enveloped in several thicknesses of blankets wrung out in water as hot as he can bear. He may remain in the hot pack from fifteen to twenty minutes, depending on the signs of exhaustion shown.

A hot pack of this kind is generally much more useful in stimulating the skin than any internal medicine. The following mixture, however, may be given by mouth further to encourage the full action of the skin :

℞

Solution of ammonium acetate .. .. .	4 ounces
Spirit of nitrous ether .. .. .	4 drachms
Glycerin .. .. .	1 ounce
Camphor water .. .. .	.. enough to make 8 ounces

Make into a mixture. Give two table-spoonsful every four hours during first few days of attack.



To relieve the pain over the kidneys hot-water bags or poultices may be applied. Care should be taken, however, that these are removed and replaced by fresh hot ones before they have got cold, otherwise serious chilling may result. If the amount of water passed is still much below the normal, the physician may try dry cupping over the kidney region.

For this purpose an ordinary thick tumbler will suffice if no regular cupping-glass is at hand. Two or three drops of methylated spirit are poured into the glass, lighted, and, while still burning, the rim of the glass is tightly pressed against the patient's skin, over the kidney region. As a result of the partial vacuum formed in the glass, the skin surface is sucked up into the glass, and all its vessels become engorged with blood. This sudden engorgement of the surface vessels, and the consequent emptying of the deeper vessels in the kidney region, often gives immediate relief in acute Bright's or congestion of the kidneys.

At the end of a week or more, or as the symptoms begin to subside, the daily purging may be omitted, and the packs reduced in frequency. However, the patient should be kept in bed on a very light, non-meaty diet until the temperature is quite normal, the amount of urine passed the same as before the attack, and until only the slightest traces of albumin are to be observed in the urine. Then for a few days more he should be confined to the house, his first outings being slow walks during the warmest part of the day.

For weeks and months afterwards he must dress warmly, taking the greatest care to avoid chilling and standing about in draughts and overheating. Alcohol he should give up indefinitely, and he should only very gradually return to animal foods. For at least six months after the attack he should favour whiting, sole, chicken, etc., in preference to beef, mutton, pork, and other strong animal foods.

Minute traces of albumin persisting in the urine for weeks or even months after an acute attack of Bright's disease should not be taken as anything more serious than a warning to continue to avoid alcohol and strong animal food. If proper precautions are taken even these lingering traces of the disease will usually finally pass off, the kidneys regaining their perfect health.

After even a mild attack of acute Bright's, the patient is almost certain to be more or less anæmic. Some tonic such as the following should therefore be taken regularly for a month or six weeks :

R	Iron and ammonium citrate	..	..	..	80	grains
	Aromatic spirits of ammonia	..	..	..	2½	drachms
	Spirit of chloroform	..	..	..	1	drachm
	Infusion of quassia	..	enough to make		8	ounces

Make into a mixture. Take one tablespoonful in a little water three times a day after meals.

A short holiday in some warm and dry climate is often of advantage in hastening the completion of convalescence.

**URÆMIA IN BRIGHT'S DISEASE.** Because uræmia may develop suddenly in any one of the different varieties of Bright's disease, a brief description of the condition will be given here.

The term uræmia is applied to a self-poisoning due to the retention in the system of certain products, presumably the result of the kidneys failing to carry out their usual duties.

Uræmia may occur in numerous other conditions totally distinct from Bright's disease, although it is most commonly noted in this ailment. In scarlet fever, gout, and yellow fever the kidneys may be seriously affected, uræmia resulting. Anything which interferes with the formation of the urine by the kidneys, such as destruction of those organs by disease or removal, will speedily bring on uræmia.

Acute and chronic types of uræmia are described. In acute uræmia convulsions, somewhat resembling those of epilepsy, may come on suddenly. They may be preceded by sickness, severe headache, and general dizziness. The pulse is usually flickering, the heart action feeble, and the breathing is laboured. Growing drowsiness passing into profound unconsciousness may be the next stage.

In chronic uræmia the symptoms are less marked and come on more gradually. The patient may be only occasionally drowsy, and the nausea and sickness, nervous twitchings, and irregular, laboured breathing may come on only at intervals.

Eye troubles, from slight dimness of vision to complete blindness, are not uncommon symptoms in uræmia. Sometimes a noisy delirium, persisting for some hours, may usher in the true uræmic coma (deep unconsciousness).

Symptoms of headache, nausea, with occasional vomiting, giddiness, increasing dropsy, twitching of the fingers, and unusual drowsiness strongly suggest the approach of uræmia when noted in a patient suffering from Bright's disease.

Sometimes intense headache and sleeplessness usher in the coma, which may or may not be preceded by the epileptiform uræmic convulsions.

Complete blindness, lasting for a few hours up to two days, may follow on uræmic convulsions.

A marked and often an early sign of uræmia which is one of the most common symptoms of this serious condition is shortness of breath. (Anders.)

The respirations may be deep and perhaps stertorous, or they may be irregular, shallow, and more rapid than normal.

Acute uræmic attacks with convulsions and loss of consciousness rarely last more than a day or two. The less severe chronic uræmia may continue for weeks on end. The occurrence of the condition always denotes some grave disability of the kidneys, and although any particular attack need not necessarily be fatal, the outlook is always very grave.





### THE KIDNEY IN BRIGHT'S DISEASE

The upper two illustrations are external and sectional drawings of the "Large White Kidney" Bright's disease, or "Bright's disease" (see page 302). The lower drawings show the more common "Small Red Kidney," or "Bright's disease" (see page 304). At the bottom are the pale casts of the kidney, or "Bright's disease" (see page 304). In the center are a large cast from acute nephritis and a fatty cast. On the right are a large cast from chronic nephritis and a fatty cast from a case of "Small Red Kidney."

(From drawings in the Gordon Museum, Guy's Hospital.)

[TO FACE PAGE 301.



Uræmia coming on suddenly in a person who is not known to be suffering from advanced Bright's disease is sometimes very difficult to differentiate from profound drunkenness, and apoplexy following hæmorrhage into the brain. The following table, modified from Herrick, gives the main points from which a correct diagnosis can usually be made in any one of these three conditions :

APOPLEXY	DRUNKENNESS.	URÆMIA.
(Bleeding into the brain.)		
Pupils unequal or dilated.	Pupils contracted or dilated ; eyes injected.	Pupils generally dilated.
Stertorous, puffy breathing and flapping cheek.	No stertorous breathing.	Sharp hissing breathing.
No odour.	Odour of alcohol.	No odour, unless urinous.
Paralysis.	No paralysis, usually.	No paralysis.
Unconsciousness absolute.	May be aroused.	May or may not be aroused.
Pulse slow and strong or irregular ; arteries often atheromatous.	Pulse frequent and feeble.	Pulse at first strong, later weak and rapid ; arteriosclerosis ( <i>q.v.</i> )
Loss of consciousness sudden and deep.	Loss of consciousness gradual.	Loss of consciousness gradual or sudden.
Convulsions late ; may be one-sided.	No convulsions.	Preceded by general convulsions, headache, etc.
Urine generally negative.	Urine generally negative.	Urine albuminous.
Apoplectic habit ; heart may show enlargement.	Red face and nose, heart often weak and dilated.	Dropsy and pallor ; heart enlarged.

Other conditions with which uræmic coma might be confounded are diabetic coma and opium poisoning. In the former the presence of sugar in the urine should give the clue. In opium poisoning the pin-point pupils which do not dilate in the slightest when protected from light are a valuable diagnostic sign.

**Treatment of Uraemia.** Since uræmia is most probably due to the retention of poisonous products in the blood, treatment must be directed towards ridding the system of these poisons as quickly as possible. In severe cases, with uninterrupted convulsions or deep unconsciousness in full-blooded individuals, bleeding from a vein carried out with proper antiseptic precautions by a physician may bring immediate relief. To replace the bulk of fluid thus withdrawn, sterilized normal salt solution may subsequently be introduced into a vein.

The bowels should be freely opened, and for this purpose, as the unconscious patient cannot take ordinary medicine, one drop of croton oil in a little powdered sugar may be placed on the back of the tongue.

Abundant perspiration should be induced, as in this way a portion of the poisons circulating in the blood may be got out of the system. A hot, moist air bath, prepared by introducing steam from a steam-kettle under a wicker-work tent draped with blankets placed over the patient's bed, is the best way to encourage free perspiration. (*See under BATHS.*) A hot, dry pack or hot, moist pack (*see page 298*), while not so efficacious, may be tried if arrangements for a hot, moist air-bath of this sort cannot be made.

The preventive measures to be adopted to ward off future uræmic attacks are included in the treatment of the various types of Bright's disease,

**CHRONIC BRIGHT'S DISEASE OR CHRONIC NEPHRITIS.** Two main varieties, the large, white kidney, or chronic parenchymatous nephritis; and the small, red kidney, or chronic interstitial nephritis, may be described here.

**LARGE WHITE KIDNEY OR CHRONIC PARENCHYMATOUS NEPHRITIS** may follow on an attack of acute Bright's or after scarlet fever, or the disease may gradually develop after a period of general low health.

Beer drinkers, as well as those who indulge constantly in spirits, are particularly liable to this form of kidney trouble. Men, probably because they drink more, are more subject to the disease than women, young adults being most frequently attacked. In children chronic parenchymatous nephritis may develop as a direct continuation of acute kidney inflammation arising during scarlet fever.

**Symptoms.** A gradually developing anæmia with pallor, general loss of health, indigestion and slight puffiness of the eyelids or about the ankles may be the first symptoms to draw the attention to the state of the kidneys. The patient frequently notes that the puffiness of the ankles becomes more marked, and spreads up the legs as the day advances, whereas on waking in the morning no swelling at all may be noticeable. The patient may also note that he is increasingly liable to indigestion attacks, with vomiting, and perhaps diarrhoea.

Frequently in these cases of large, white kidney the pastiness of the complexion, the marked pallor and the puffiness of the eyelids afford a characteristic picture making diagnosis easy.

The urine in chronic parenchymatous nephritis in the early stages is usually lessened in amount, a smoky yellow, and cloudy in consistency. Frequently on standing a heavy sediment will form. Variable, and perhaps large amounts of albumin may be found by use of the boiling and acetic acid test. (*See ALBUMIN.*) Granular hyaline and epithelial casts, together with red and white blood cells can be seen on microscopical examination of the urine.

The outlook is always very grave in this variety of chronic Bright's disease, whether in children or in grown people. In a case which has persisted for more than a year recovery is rare. (Sir William Osler.)

Too often the puffiness of the tissues underlying the skin (due to their infiltration with fluid) extends all over the body. Dropsical fluid may collect in the abdomen, or the lungs may become "waterlogged," leading to a fatal result within a few months. In other cases death may result from inflammation of the lungs, pleurisy, or pericarditis (inflammation of the heart's covering). Again, convulsions or uræmia lead up to the fatal termination.

In children the prognosis is slightly better, recovery sometimes taking place even after the disease has persisted for eighteen months or more.

**Treatment.** The various symptoms as they arise should be treated along similar lines to those laid down for acute Bright's. Any sudden flare up of symptoms should be looked upon as an acute attack, and treated accordingly.

Although a milk diet is a necessity during any such temporary increase of severity in the symptoms, patients are very apt to get very tired of milky foods only, and in fact may lose strength on a too restricted diet.

The following table (S. West) gives the order in which extra articles may gradually be added should the patient become weak and depressed on a too restricted diet. The effect of each advance towards more solid foods must, of course, be carefully watched, and if there are any suspicions that the more liberal dietary has caused a lighting up of the kidney disease, a return must immediately be made to milk and milk foods again.

- (1) Milk.
- (2) Milk with farinaceous foods.
- (3) Milk, farinaceous foods, with an egg or two and some cream.



DERMATITIS OF THE FEET IN CHRONIC BRIGHT'S DISEASE

Eczema and other abnormal conditions of the skin not infrequently develop in chronic Bright's disease.

From a drawing in Guy's Hospital Museum.

- (4) Milk, farinaceous foods ; an egg with beans, peas, potatoes, or green vegetables.
- (5) The previous diet, with the addition of fish.
- (6) Boiled meats (white or red), fresh pork, etc.
- (7) White or red meats, roast or boiled.

Such vegetables as tomatoes and asparagus should be forbidden.

The patient should look on himself as a chronic invalid, and arrange his affairs so as to live as quiet and worry-free a life as possible, avoiding all excitement, over-fatigue, and exposure to cold and damp. Alcohol is forbidden, and the diet should consist largely of milk, custards, junket, fruit, fresh and stewed, and green vegetables. To combat the anæmia which usually

complicates these cases, a course of some simple iron tonic, such as Blaud's pill, one to three after each meal, should be taken for a few weeks twice a year.

A second variety of chronic parenchymatous nephritis in which the kidney, instead of being large and pale in colour, is smaller than normal and white, is also described. The decrease in size is due to the gradual shrinkage of the abnormal connective tissue, laid down throughout the kidney substance in the course of the disease. "Small white kidney" is generally looked upon as a later stage of "large white kidney."

**THE SMALL RED KIDNEY, OR GRANULAR KIDNEY OF CHRONIC INTERSTITIAL NEPHRITIS** is much the commonest variety of Bright's. This form of kidney degeneration may develop (1) as a primary disease dependent on no former illness, (2) may be a later stage of the "large white kidney," described above, or (3) may be a sequel to arterio-sclerosis. (*See ARTERIO-SCLEROSIS.*)

The primary form may be described as a premature ageing or wearing out of the kidney substance. Often no cause can be found. The daily consuming of alcoholic beverages and over-eating (especially of meats), together with a sedentary habit of life, are probably the chief causes. Much more common is the arterio-sclerotic form met with in middle-aged men, whose strenuous business lives and lack of moderation in eating and drinking have prematurely aged their circulatory systems.

In some families there seems to be a hereditary tendency to the development of chronic interstitial nephritis about middle age. Syphilis and gout are also considered to predispose towards the development of the disease.

**Symptoms.** Sometimes the symptoms of chronic interstitial nephritis or "small red kidney" are so mild that the disease may be far advanced before the patient even realises that he is not in his usual health. On the other hand, sleeplessness, increasingly frequent headaches, dimness of vision, shortness of breath on going up stairs, and the forming of a habit of being waked up during the night by the necessity of emptying the bladder may warn him that something is wrong.

Indigestion and failing appetite, with perhaps quite unaccountable fits of vomiting are common symptoms. A furred, heavily coated tongue in the morning, with an offensive breath, headache and neuralgic attacks are early and fairly constant symptoms in the histories of sufferers from this variety of chronic Bright's.

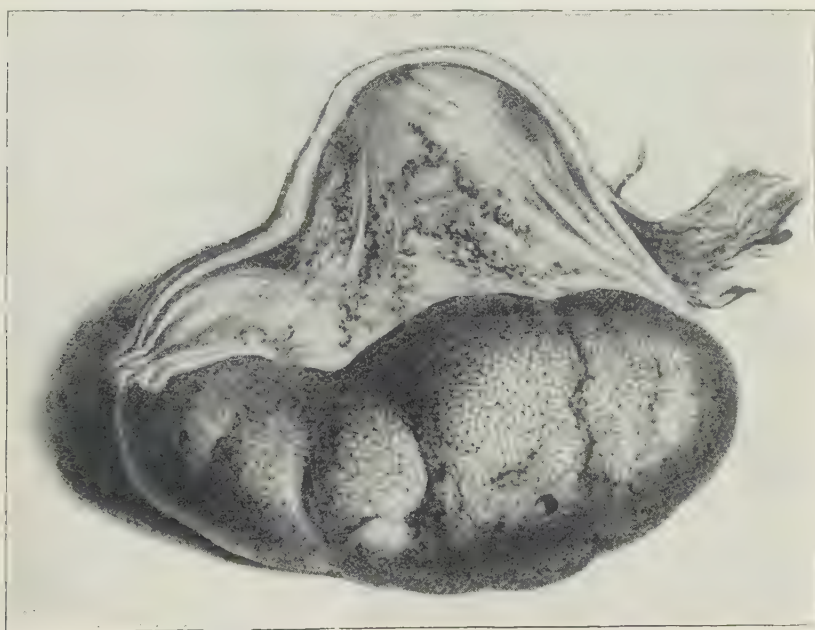
In other cases a gradual dimming of the vision, which may bring the patient to the oculist, may lead to the discovery of characteristic hæmorrhages into the retina of the eye which at once suggest kidney involvement. A constant thirst is another common symptom, particularly in cases where large quantities of urine are passed in the twenty-four hours. Severe headache seizures, accompanied by nausea and vomiting, and therefore commonly mistaken for "bilious headaches," may be an early sign of this type of chronic Bright's.



ringing in the ears, intense itching of the skin, and nose-bleeding are other not uncommon symptoms. The skin is usually dry and pale, and outbreaks of eczema may trouble the patient for years before kidney disease is suspected.

In the majority of cases the urine is largely increased in amount, pale in colour, and of low specific gravity. Whereas in acute nephritis and in the chronic parenchymatous type large amounts of albumin are usually present, not uncommonly traces only are to be found in this type. Sometimes albumin may be absent altogether for a day or two, but successive tests will always at one time or another show its presence.

Only occasionally are blood cells to be seen floating in the urine. Under the microscope a few hyaline and granular casts are usually to be found



THE SMALL GRANULAR RED KIDNEY IN BRIGHT'S DISEASE  
From a drawing in the Gordon Museum, Guy's Hospital.

Generally the walls of the artery at the wrist can be felt to be thickened and hard. A certain amount of pressure is required from the observer's finger before the pulse here can be obliterated. This combination of a slightly thickened and hardened artery with a pulse of constantly high tension is an important sign of chronic interstitial nephritis.

Because the heart has to overcome the greater resistance offered by the hardened and inelastic arteries it increases in size from overwork. The apex beat—that is the point where the beat of the heart against the ribs is most apparent to the hand placed over the chest wall—instead of being internal to the left nipple in the fifth interspace, may be displaced an inch or more downwards and outwards (see page 119).

As a direct result of the kidney degeneration and its effects on the circulatory system, cirrhosis of the liver, catarrh of the stomach, pericarditis, bronchitis, or hæmorrhage into the brain (apoplexy) may develop as a complication.

Sometimes the kidneys may reach an advanced stage of degeneration before causing the patient any material inconvenience. Then some ailment such as acute pneumonia or bronchitis attacks him, and the resulting strain thrown on the system leads to a sudden unmasking of the kidney symptoms. In other cases, without any previous warning, an attack of uræmia ensues, the result of a chronic blood-poisoning due to the retention in the body of waste matters of which the damaged kidneys have failed to rid the system. Beginning with headache, nausea, general mental uneasiness, and shortness of breath, the heart action speedily becomes feeble, and with or without convulsions the patient speedily falls into a state of deep unconsciousness. As a general rule this will not prove fatal, the patient after some hours recovering consciousness and regaining more or less his usual health. He rarely, however, becomes fully robust again, complaining on the contrary of lack of energy, dyspepsia, constant headache, shortness of breath, and the necessity of having to pass his water at abnormally short intervals.

Months or perhaps years afterwards a second uræmic attack may occur, leaving him (if recovery takes place), more feeble and shattered than before.

In not very rare instances the bursting of a small blood-vessel in the brain, resulting in paralysis of half the body, may be the first sign to draw attention to the diseased state of the kidneys. The puffiness of the ankles and about the eyes which is so constant a symptom in the other varieties of kidney inflammation, is rare in chronic interstitial nephritis, except in the later stages when the heart is beginning to fail.

The outlook in this type is very much better than in chronic parenchymatous nephritis. Unless some complication such as pericarditis, bronchitis, cirrhosis (of the liver), or hæmorrhage into the brain sets in, the patient may live for twenty or more years.

Persistent vomiting and diarrhœa, convulsive seizures, the presence of patches of inflammation of the retina of the eye, and attacks of uræmia or drowsiness all greatly add to the gravity of the outlook.

**Treatment.** An absolute cure can never be looked for in this variety of chronic Bright's, for when once the kidney structure has degenerated and the highly specialised cellular tissue has been replaced by fibrous tissue (containing no secreting cells), no medicine can possibly restore the kidney to its former usefulness.

However, much can be done to retard the degenerative processes, and with proper treatment, and in particular with a certain amount of self-denial and control of his appetites, the patient may usually look forward to many years of fair health and activity.

As in acute Bright's, so here also the first rule in treatment is to diminish, as much as possible, the work of the kidneys. As the heart and arteries are also involved in the "small red kidney" type of chronic Bright's, all strain on these parts must also be reduced to a minimum. The patient, if possible, should retire from active business, particularly if this is of an exciting or worrying nature or one which necessitates prolonged physical fatigue or exposure to wet and cold. A simple, lazy life in a dry, sunny climate is, in fact, the very best medicine of all. The patient should make a point of getting regular but gentle outdoor exercise, at the same time avoiding all over-fatigue. For the rest of his life he should keep to a simple, nourishing, largely vegetarian diet, be moderate with his tea and coffee, and give up alcohol in every shape and form.

To help the damaged kidneys in their duties of washing out from the blood the constantly accumulating impurities, the bowels and the skin must be kept always at the highest pitch of efficiency. Two or four grains of cascara at night, or a teaspoonful of Epsom salts before breakfast, together with plenty of not too acid fruit, either raw or cooked, should be sufficient to keep the bowels regular and loose rather than costive.

To keep the skin active a daily bath at the temperature of 80° to 90° should be taken and followed by a brisk rub down with a rough towel.

Plenty of plain water, mineral water, or weak lemonade should be drunk between meals to keep the kidneys well flushed out.

To combat the anæmia nearly always present in chronic Bright's, one or two Bland's pills may be taken three times a day after meals or fifteen drops of the tincture of the perchloride of iron three times a day after meals. The tincture should be sucked through a glass tube and swallowed with as little soiling of the teeth as possible, as it is apt to injure them.

Sometimes the iron has a very constipating effect. A little salts added, as in the following prescription, may put this right.

R

Sulphate of iron	..	..	..	..	10 grains
Sulphate of magnesia	..	..	..	..	2 drachms
Water	..	..	..	enough to make	6 ounces

Make into a mixture. Take one tablespoonful three times a day after meals.

"Kidney medicines" are not of real value in arresting the progress of the disease, and are only too apt to upset the digestion.

In advanced cases uræmic symptoms, convulsions, unconsciousness, etc., may suddenly develop and speedily lead to a fatal termination of the disease. (See *URAEMIA under ACUTE BRIGHT'S DISEASE*, page 300.)

Dropsy may be a very troublesome symptom in this as in all other types of kidney disease. Medicines which will help in ridding the tissues of the

excessive fluid are needed here. Below is a typical kidney mixture, such as might be prescribed for a grown person :

R	Potassium acetate..	..	..	..	..	1 drachm
	Spirit of juniper	..	..	..	..	1½ drachms
	Spirit of nitrous ether	..	..	..	..	3 "
	Decoction of broom	..	..	..	..	6 ounces

Make into a mixture and take three to four teaspoonsful, repeating dose in four hours.

For the dull ache over the kidney region, often noted in chronic Bright's disease, the following sometimes gives great relief :

R	Copaiba balsam	..	..	..	..	6 drachms
	Oil of juniper	..	..	..	..	2 "
	Spirit of nitrous ether	..	..	..	..	6 "
	Compound tincture of camphor	..	..	..	..	4 "
	Solution of potash	..	..	..	..	1 ounce
	Water	..	..	..	..	6 ounces

Make into a mixture. Take one teaspoonful in a little water, and repeat in four hours if necessary.

**BRIGHT'S DISEASE IN CHILDREN** may be either acute or chronic.

**ACUTE BRIGHT'S DISEASE IN CHILDREN** may develop in the course of scarlet fever or in convalescence, or may follow after any of the acute fevers of childhood. A great many cases, on the other hand, cannot be dated back to any acute illness, but begin suddenly after exposure to wet, damp, or cold.

**Symptoms.** A suddenly developing dropsy is probably the first thing noted by the mother, or her attention may have been arrested by the smoky, reddish-brown coloured urine. Instead of passing the ordinary amount, the child may void only a tablespoonful or so at a time. In young children convulsions may be noted early in the attack. On testing the urine for albumin (*see* ALBUMIN) a heavy cloud will be noted.

While a common symptom, dropsy is by no means always present in acute Bright's disease.

In a favourable case the albumin in a few days begins to decrease in amount, and the blood cells, which can readily be detected on examining a drop of the urine under the microscope, disappear. More water is passed and the dropsy begins to subside. After three or four weeks the albumin may have entirely disappeared, and the child will make a complete recovery.

In other cases where the albumin persists and the water remains scanty the outlook is bad. The child may suddenly develop convulsions and die in a uræmic state, or the acute inflammation may merge into chronic Bright's.

As there may be no signs of dropsy at the start of the attack at once to suggest kidney inflammation, any sudden reduction in the amount of water passed by a child should be recognised as a possible initial symptom of acute Bright's, and should lead to an immediate examination of the urine for albumin.



**Treatment.** The little patient should at once be put to bed between blankets. To assist the skin in taking over a portion of the duties of the diseased kidneys, the following mixture may be given :

R	Solution of ammonium acetate	..	..	2	drachms
	Spirit of nitrous ether	..	..	2	"
	Tincture of digitalis	..	..	1	drachm
	Peppermint water	..	enough to make	4	ounces
Make up into a mixture. Give one teaspoonful every three hours in a little water.					

The only food given should be milk, milk and soda, or whey. The child may have plenty of pure water or weak lemonade if there is fever and thirst. If the skin does not act readily, profuse sweating may be induced by giving the child a wet pack. (*See page 298.*) After the pack the child should be thoroughly rubbed down with a soft but rough towel, and again put between dry blankets. The greatest care should be taken to avoid any chill or exposure now, and for weeks or even months after recovery.

Should the child suddenly become drowsy or semi-unconscious, or should convulsions develop, dry cups (*see page 299*) may be applied over the kidney region, and a wet pack may be given. Should the temperature suddenly run up while the patient is in the hot pack, this should be immediately stopped, and the patient hurriedly dried and put between dry blankets again. Heart weakness may develop, requiring the administration of strong heart stimulants by the physician in attendance.

**CHRONIC BRIGHT'S IN CHILDREN**, as in adults, may be of the large white kidney type or of the small red kidney type. In the latter there is an increased amount of pale yellow urine, a variable quantity of albumin, little or no dropsy, with signs of hardening of the arteries and over-growth of the heart muscle. In the parenchymatous type, or large white kidney, the symptoms are very similar to those in grown people. The treatment is the same as that described under chronic Bright's in adults.

**BRINE BATHS** (*see BATHS*) can be prepared at home by using the Droitwich or other salts. They are useful in sciatica, lumbago, and chronic rheumatism.

The bath should be of blood temperature (98°). The patient should stay in it for fifteen to thirty minutes, then be quickly dried and put to bed.

**BROMIDES.** The bromides of potassium, of sodium, and of ammonium are much used in medicine. The dose of each is five to thirty grains.

The chief value of the bromides is in the treatment of nervous diseases, particularly epilepsy. All three have a depressant effect, lessening the normal excitability of the brain.

The bromides are also of great value in sleeplessness which is the result of abnormal mental excitement or excessive brain work. They are, however, practically useless where there is actual pain to keep the patient awake

In delirium tremens the bromides, together with chloral, may be given by mouth or as an enema, and sometimes have a valuable quieting effect. In intense nervous headaches where the patient is completely prostrated, full doses—from twenty to thirty grains—of the bromides sometimes give great relief. Diluted hydrobromic acid, in half-drachm to drachm doses, is sometimes taken internally as a remedy for buzzing in the ears.

Bromides should never be taken except under a doctor's supervision, as a dangerous "bromide habit," very difficult to throw off, may develop, leading to the victim's permanent invalidism.

**BROMIDE RASH.** Occasionally symptoms of a low-grade bromine poisoning result when the bromides are taken in too large doses, or for too long a time.

The chief symptoms are a characteristic reddish rash very similar to that of acne appearing on the face and back. The patient feels slack and easily tired, and has no mental or physical energy.

There may be slight redness about the eyes and stuffiness of the nose. The patient sleeps badly and is apt to become hypochondriacal.

The only treatment necessary is the immediate cutting off of the bromides.

**BROMIDROSIS**, or foul-smelling perspiration. Scrupulous cleanliness, obtained by a full hot soap and water bath every day, with particular attention paid to the feet and armpits, is the first essential in treatment. After the bath the feet should be thoroughly dried and well-dusted with a powder made up of one part of boracic acid, two parts of powdered zinc oxide, and two parts of starch. Fresh socks or stockings should be put on daily. The same powder may be dusted well into the armpits, and in other regions where perspiration is likely to be free.

If the above treatment is not sufficient to do away with the unpleasant odour, soak the feet and bathe the armpits thoroughly in a weak solution of permanganate of potash for ten minutes after the bath in the morning and at night.

Another useful preparation for excessive and ill-smelling perspiration is the following lotion, to be dabbed on night and morning:

R

Tannic acid	..	..	..	..	..	1 teaspoonful
Rose water	..	..	..	..	..	2 ounces
Eau de cologne	..	..	..	..	..	4 "

Shake well, and apply with a small sponge.

A stronger lotion which might be tried if the above fails is the following:

R

Boracic acid (saturated solution)	..	..	..	2 parts
Solution of hamamelis	..	..	..	2 "
Tincture of belladonna	..	..	..	1 part

Make into a lotion, and mark "poison if taken internally."

Sop a little on to the feet and hands in the morning, and allow to dry on.

**BRONCHIAL TUBES.** The wind-pipe, or trachea, which is the direct continuation of the larynx, passing down the middle of the neck, in front of the gullet, divides under the breast-bone into two bronchi, one of which runs to each lung. The left bronchus divides again into two main divisions, one entering each of the lobes of the left lung, while the right bronchus divides into three branches, corresponding to the three lobes of the right lung. These branches break up again and again like the branches on a tree, so that through them air can pass to and from the farthest parts of the lung.

The bronchi, just as the trachea, or windpipe, and the larynx, are lined with a delicate mucus membrane. In bronchitis it is this delicate membranous lining which becomes irritable and inflamed. The expectoration spat up is made up of mucus and broken-down white blood cells, etc., which, unless got rid of by coughing, tend to block up the air channels.

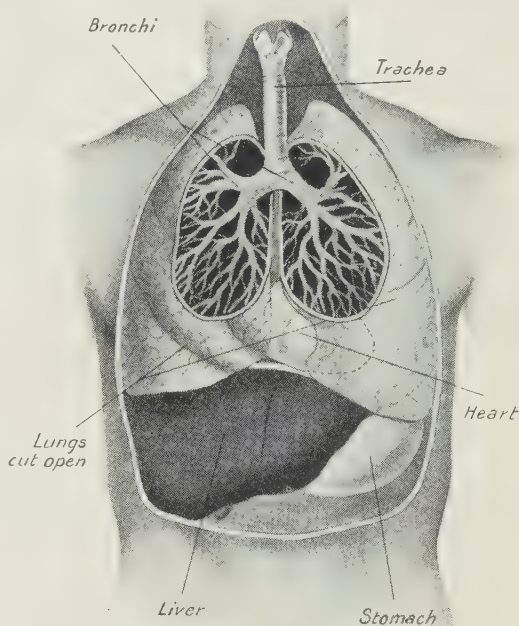
To keep the passage-way through the trachea and the larger bronchi always open the walls of these structures contain rings of cartilage which prevent the tubes collapsing.

**BRONCHITIS** is the name given to any inflammation of the bronchial tubes or chief air passages in the lungs.

The chief varieties described are acute bronchitis, capillary bronchitis, and chronic bronchitis.

Broncho-pneumonia is practically always associated with capillary bronchitis, and by many authorities the two ailments are considered as one and the same disease. (See BRONCHO-PNEUMONIA.)

**BRONCHITIS, ACUTE,** is a catarrhal inflammation of the mucus membrane which lines the air-tubes in the lungs. It is a very common ailment, and in robust individuals, between childhood and old age, it is rarely dangerous in itself. On the other hand, acute bronchitis is always an extremely serious ailment when it attacks infants or old people.



THE BRONCHIAL TUBES

The name acute bronchitis is reserved for those cases where the larger and middle-sized air-tubes are involved in the inflammation. When the process spreads to the very fine end-branches of the air-tubes, the disease is given the name broncho-pneumonia or capillary bronchitis (*which see*).

Acute bronchitis may occur at any season in the year, but is most common in the damp, changeable weather of spring and autumn. The bronchitis may attack the lung tubes at the start, or may result from an ordinary cold in the head, spreading downwards into the chest.

Besides being a disease of itself, acute bronchitis is often a part of other diseases, notably measles, influenza, and whooping cough. No age is exempt, but children and the aged are more liable to attack than young or middle-aged adults.

**The Cause.** Acute bronchitis is due to some germ or germs settling on the lining membrane of the air-tubes in the chest, and there setting up a catarrhal inflammation.

**Symptoms.** As a general rule, an attack of acute bronchitis is ushered in by "cold-in-the-head" symptoms or sore throat. The patient is depressed and perhaps shivery, and "feels he is going to be ill." He may complain of vague pains in the back and shoulders. There is usually some fever in the early stages, rarely higher than 102° F.

After some hours in which the cold in the head symptoms are predominant (or in some cases without any previous cold in the head symptoms at all), the patient notices a feeling of rawness and stuffiness in the chest underneath the breast-bone. There may be some cough of a hard, barking note, which greatly tires the patient. At this stage he spits up nothing or little. The pain after a coughing fit may be severe, and may prevent the patient getting any sleep at night.

After two or three days the expectoration, which hitherto has been very scanty and sticky, becomes more abundant and creamy-yellow in consistency. As he begins to cough up more and more of this mucopurulent matter from the tubes, the pain on coughing, and the general distress of the patient are markedly relieved. As a general rule, there is rarely any great difficulty in getting air into the lungs, the patient having none of the distressing shortness of breath so common in capillary bronchitis or broncho-pneumonia.

The patient is sometimes alarmed in the later stages by the bubbling, whistling sounds which he himself can hear in his lungs. Far from being a sign of danger, these sounds simply mean that the cough is breaking up, and that he is approaching convalescence.

Usually at the end of five to seven days the fever has disappeared, and the cough has loosened. The chief danger—and it is always a grave one in the



case of infants and old people—is that the catarrhal inflammation of the air-tubes in the lung may extend downwards into the fine end-tubes which lead directly into the air-cells. Should these become blocked with the products of the inflammation of their lining cells, whole portions of the lung may be thrown out of use, and the patient may die with all the symptoms of acute broncho-pneumonia.

**Treatment for a Grown Person.** The patient should be put to bed at once after a full hot bath, or a hot mustard and water foot bath. A mustard plaster may be applied to the chest and left in place for ten minutes. Frequently this will relieve the tightness and distress in the chest.

To quiet the racking cough which is doing no good (seeing that there is little or no expectoration to be brought up as yet), the adult patient, if otherwise healthy, may be given five grains of Dover's powder.

This remedy should *never* be employed in the case of infants or old people.

The bowels should be opened freely by a purgative, such as one-sixth of a grain of calomel every half-hour, until one grain has been taken, followed next morning by a teaspoonful of magnesium sulphate in a wineglass of water.

A Turkish bath at the onset of acute bronchitis sometimes has a very beneficial action if the patient can go to bed immediately, and does not run the risk of catching additional "cold" in going home afterwards. (Osler.)

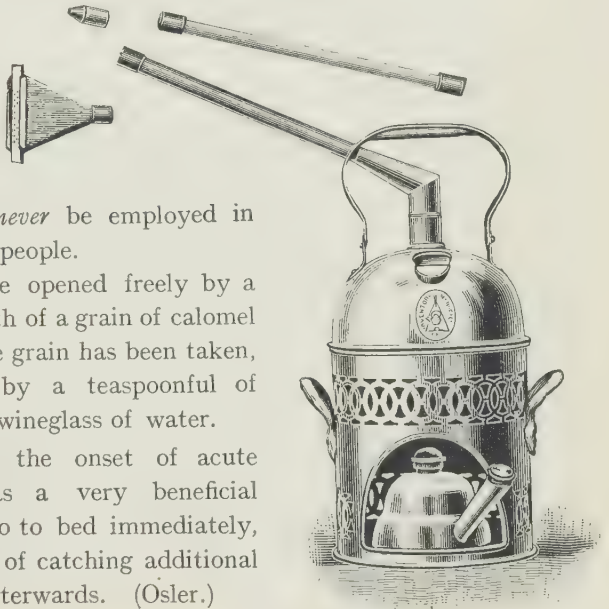
The quality of the air the patient has to breathe will have much to do with the degree of discomfort he suffers in these early stages. In the first place, pure clean air is the best of all local applications to the lungs, therefore the windows of the sick room should be kept open, though of course the patient must be protected by screens from any actual draught.

Very dry air only increases the sense of oppression in the chest, so the air about the patient should be kept moist by a bronchitis kettle (see page 208.)

While the cough is still dry and hard, the following mixture may be prescribed to relieve the distress and hasten the loosening of the cough:

R	Compound tincture of camphor .. ..	1 ounce
	Wine of ipecacuanha .. ..	80 minims
	Solution of ammonium acetate .. ..	3 ounces
	Distilled water .. ..	to make 8 ounces

Dose. Two tablepoonsful every four hours.



BRONCHITIS KETTLE WITH SPIRIT STOVE

If the patient is kept awake at night in these early days by the cough, Dover's powder, three to five grains, may be given at bedtime. (Note that this remedy is only to be used in the case of a robust grown person).

When the cough loosens and the expectoration becomes profuse, remedies which will assist the patient to throw off the accumulated secretion blocking up the lungs may be given. A useful mixture here is the following:

R					
	Ammonium carbonate	..	..	..	40 grains
	Infusion of senega	..	..	..	4 ounces
	Tincture of squill	..	..	..	2 drachms
	Chloroform water to make	..	..	..	8 ounces

Dose for an adult. Two tablespoonsful every four hours.

With children and infants, expectorant mixtures, such as the above, are rarely practicable. Sometimes, however, when the air-tubes in the lung are blocked up by the secretion, measures must be taken to clear them out. Emetics are useful here. Half a teaspoonful to a teaspoonful of ipecacuanha may be given immediately signs of distress from blocking up of the air tubes are noticed, and repeated in two hours' time if again necessary. The vomiting following the administration of the emetic leads to a forcing out of the lungs of the secretion filling up the tubes, bringing immediate relief to the patient.

**BRONCHITIS, CAPILLARY.** When an ordinary bronchitis descends deeper into the lungs, affecting the tiny end-branches of the bronchial tubes, the increased gravity of the situation immediately becomes apparent. In practically all cases the inflammation of the smaller tubes is associated with some consolidation of the lung itself, so that in all cases of capillary bronchitis we have to deal with broncho-pneumonia.

The patient's restlessness and distress increase, the temperature becomes higher, he has much greater difficulty in breathing, and the cough is more marked. Because sufficient oxygen cannot be drawn into the lungs properly to aerate the blood, the patient's complexion becomes pale, or even bluish, while the lips are often livid. (See BRONCHO-PNEUMONIA.)

The patient, usually a child or an old person, needs the *immediate* attention of the physician if his life is to be spared, so no time should be wasted on home remedies.

As in ordinary bronchitis, a steam kettle for mixing with the air in the sick-room, either plain steam or vapourised compound tincture of benzoin (see BENZOIN, page 208) often gives great relief.

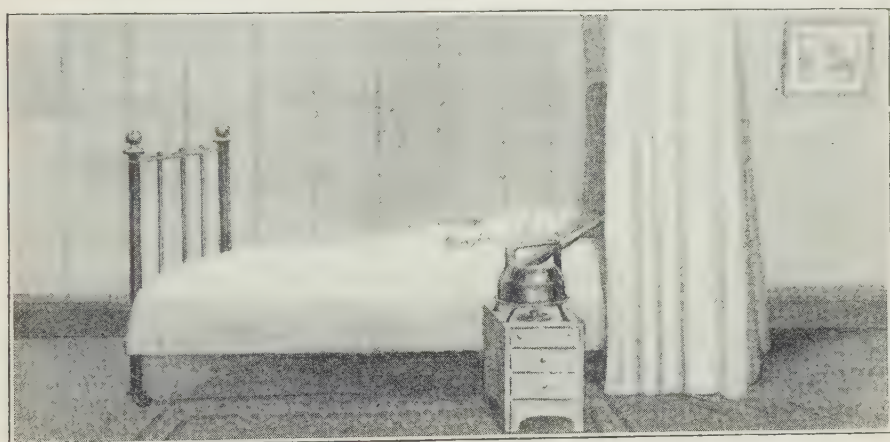
As children frequently have great difficulty in coughing up the accumulated mucus, an emetic of mustard (a teaspoonful of mustard in a glass of water), or of five to ten grains of sulphate of zinc may help in relieving the chest.

The convalescence after capillary bronchitis is an even more dangerous period than that after ordinary bronchitis. If possible, the patient should be taken to some warm equable climate for a few months, during which every endeavour should be made to build up his general health.

**BRONCHITIS, CHRONIC.** After several attacks of acute bronchitis the lungs, particularly in middle-aged people, may lapse into a condition where a cough develops regularly at the start of each winter, lasting until the following summer. In some cases of chronic bronchitis the patient is never free from cough, his lung symptoms, however, being less marked in fine weather.

**Symptoms.** Except for the fact that the patient has little fever and feels well in himself, the symptoms may be much the same as those in the later stages of acute bronchitis. On waking in the morning the patient often has a prolonged and severe fit of coughing which brings up the loose expectoration which has accumulated in the bronchial tubes overnight.

**Treatment.** The ideal treatment is to remove the patient to a warm climate, where his general health can be built up by careful attention to the general rules of hygiene. As bronchitis is frequently found in the aged, and



BED ARRANGED WITH CANOPY AND KETTLE FOR ACUTE BRONCHITIS.

in sufferers from other more or less chronic ailments, there may be predisposing causes to the disease which will need the physician's attention. When there is no other causative disease, the following tonic taken in the early autumn will often go a long way towards warding off the usual winter attack:

R	Sulphate of iron .. .. .	48 grains
	Sulphate of quinine .. .. .	48 "
	Sulphate of magnesium .. .. .	3 ounces
	Dilute sulphuric acid .. .. .	3 drachms
	Water .. .. .	enough to make 12 ounces

Dose. Take two teaspoonsful in a little water three times a day after food.

Where the expectoration is fairly profuse and the cough is very wearing the following medicine is suitable for an otherwise fairly robust individual:

R	Ammonium carbonate .. .. .	40 grains
	Tincture of squills .. .. .	1½ drachms
	Compound tincture of camphor .. .. .	3
	Infusion of senega .. .. .	enough to make 8 ounces

Take two tablespoonsful every six hours,

Heroin sometimes quiets a tiring cough, but should be used sparingly if there is much expectoration. The following prescription may be used for a grown person whose strength is being wasted by constant coughing:

R	Heroin hydrochloride	..	..	..	..	2 grains
	Tincture of hyoscyamus	..	..	..	..	3 drachms
	Syrup of tolu	..	..	..	..	1½ ounces
	Spirit of chloroform	..	..	..	..	3 drachms
	Glycerin	..	..	..	enough to make	8 ounces
Make into a mixture. Take one teaspoonful every four hours till cough is quieted.						

When there is a difficulty in getting the mucus up, the expectoration being small in amount and sticky in character, the following mixture may be given.

R	Potassium iodide	..	..	..	..	30 grains
	Ammonium carbonate	..	..	..	..	40 "
	Syrup	..	..	..	..	6 drachms
	Water	..	..	..	enough to make	8 ounces
Take one or two tablespoonsful three times a day after meals.						

Sleeplessness is sometimes very troublesome in cases of chronic bronchitis. The bromides are useful here, but their depressing effect must not be forgotten. If the patient's heart is strong the following mixture may bring relief:

R	Sodium bromide	..	..	..	..	2 drachms
	Ammonium bromide	..	..	..	..	1½ "
	Syrup	..	..	..	..	4 "
	Water	..	..	..	enough to make	6 ounces
Take two tablespoonsful at bedtime.						

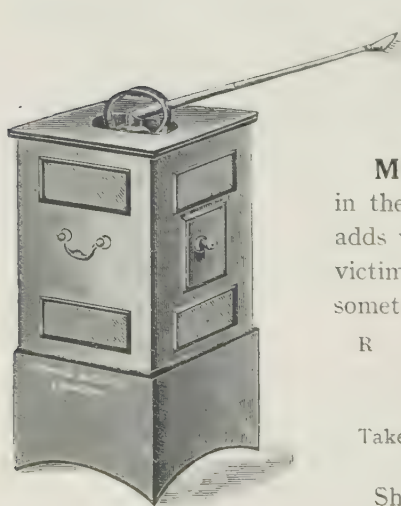
If the physician has reason to fear the depressant effect the bromides have on the heart he may add five to ten drops of tincture of digitalis to each dose.

**Morning Cough.** Persistent, weakening cough in the morning, immediately on waking, often adds to the miseries of the chronic bronchitis victim. A hot alkaline drink such as the following sometimes does well here:

R	Sodium bicarbonate	..	..	2 drachms
	Potassium bicarbonate	..	..	1 drachm
	Chloroform water	..	..	4 ounces

Take one tablespoonful, mixed with two tablespoonsful of very hot water, immediately on waking.

Should the symptoms become suddenly more severe, with tightness of the chest and fever, the treatment advised for acute bronchitis should be immediately begun. Sufferers from chronic bronchitis will do well to pay particular attention to keeping the bowels regular. Two to three grains of cascara taken at night are usually all that is required

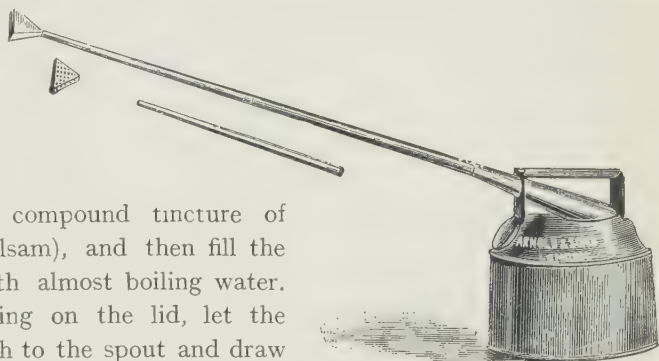


BRONCHITIS KETTLE WITH BED-SIDE STAND AND STOVE



To soothe the irritated mucous membrane of the bronchial tubes nothing is better than inhalations of steam impregnated with the vapour of compound tincture of benzoin. An old teapot with a tight-fitting lid is the only apparatus needed for this.

First warm the teapot with boiling water. Empty this out, and immediately put in a teaspoonful of the compound tincture of benzoin (Friar's balsam), and then fill the teapot half full with almost boiling water. Then, quickly putting on the lid, let the patient put his mouth to the spout and draw into the lungs deep breaths of the steam and benzoin vapour. Care must be taken, of course, that boiling water is not sucked up into the mouth.



A SIMPLE FORM OF BRONCHITIS KETTLE

Externally a thorough rubbing of the chest with ordinary soap liniment and then covering the chest with a warm jacket of flannel often relieves the cough, and gives the patient a sensation of warmth and comfort. Of all the interminable list of internal medicines nothing is better than guaiacol carbonate in five-grain cachets, one to be taken three times a day after meals.

The victim of chronic bronchitis, however, should place more reliance on building up his general health at the approach of each winter by careful attention to the ordinary laws of hygiene, and the taking of some tonic as that suggested above, with perhaps a long course of an emulsion of cod liver oil.

**BRONCHITIS IN CHILDREN, ACUTE.** The common cold on the chest, or acute bronchitis, is a most common ailment in childhood. Practically anything which temporarily upsets the child's system—for example, teething, over-fatigue, or exposure to sudden cold—may bring on acute bronchitis.

**Symptoms.** A flushed face, shortness of breath, restlessness, and sudden fever (perhaps two or three degrees) are the first symptoms. The child's skin is moist and hot, the bowels are constipated, and the tongue is usually heavily coated. The little patient may complain of difficulty of breathing, and in a few hours the cough begins.

The child may now be very flushed of face, or even livid. Nothing may be spat up as yet, as the cough at the start is usually short and dry. Sonorous, more or less musical sounds can frequently be heard at this stage when the ear is placed over the child's chest. By the following day the dry, musical sounds in the lungs will probably have been replaced by moist, bubbling sounds as the cough loosens. Expectoration may now be profuse, and the child should be taught the necessity of spitting this out, and not swallowing it.

**The Outlook** depends largely on whether the inflammation of the bronchial tubes—that is, the acute bronchitis—extends down to the finer ending-tubes and the lung-cells themselves (capillary bronchitis or broncho-pneumonia). Increasing difficulty of breathing, semi-unconsciousness and symptoms of heart failure, together with signs which lead the physician to believe that the inflammation is extending downwards, make the outlook very grave.

**Treatment.** Because of the ever-present risk of the inflammation in the bronchial tubes descending further down into the lungs, every case of a sudden cold-on-the-chest in a young child should be treated seriously.

The patient should be put to bed at once, and curtains arranged at the sides of the head of the bed. The air which the patient breathes should be kept moist all day by the use of a steam kettle (*see page 315*).

Heavy poultices over the chest do more harm than good, and should never be used in young children. At the start of the attack a strip of skin three inches wide, from the neck down the centre of the chest, may be painted with one or two coats of tincture of iodine, and covered with a pad of cotton-wool.

Medicines to reduce the fever are always dangerous in young children, however useful they may be in grown people. It is generally better, therefore, to make no effort to reduce the temperature by the use of drugs.

On the third or fourth day of the attack the loose mucus in the lungs may accumulate more rapidly than the child can cough it out. Here an emetic may be of great value. From twenty to forty drops of the wine of ipecacuanha is a suitable dose for a child from five to eight years old.

The diet should be nourishing and plentiful. Custards, junkets, lightly boiled or raw eggs, milk, and strong meat broths are needed to keep up the child's strength. Where there is much blueness or attacks of increased shortness of breath, inhalations of oxygen often give great relief. A metal cylinder of oxygen gas under pressure should be kept by the bedside, and from time to time a little of the oxygen should be allowed to escape through a tube leading to a mouthpiece held close to the patient's mouth and nose. Any chemist can supply these cylinders.

**Convalescence.** The greatest care must be taken to protect the patient from draughts, chill and dampness during this dangerous period. It is best to keep him in bed for a day or two after all fever has disappeared, and then for another couple of days he is better indoors. On the fourth or fifth day after all the acute symptoms have subsided, he should be dressed warmly, but not too heavily, and taken for a walk by the nurse or some other grown person about the middle of the day. The patient should not be allowed to play about out of doors with the other children during convalescence, as if not carefully watched he may become overheated, which may be enough to cause a relighting up of the bronchitis.

Where convalescence is slow, a month's course of one of the cod liver oil

emulsions with malt extract—two to four teaspoonsful after each meal—is a valuable tonic. If the child has become much run down during the attack a quinine and strychnine tonic—such as 15 to 30 drop doses of Easton's Syrup three times a day after meals for a few weeks often acts as a powerful pick-me-up.

**BRONCHITIS IN CHILDREN, CHRONIC** may follow on a series of acute attacks, or it may develop from the start as a chronic state.

**Symptoms.** The child usually shows pronounced symptoms of lack of sufficient oxygen in the blood. The face and lips are usually more or less bluish, he coughs constantly, and is very short of breath on exertion. Bubbling and whistling sounds can be heard throughout the lungs when the ear is placed against the child's chest. A peculiar bulbous enlargement of the ends of the fingers, known as "clubbing," is frequently noted in these cases.

The amount of expectoration varies widely, but may be considerable. Frequently there may be a prolonged coughing spell on waking in the morning. The expectoration is usually a creamy, dirty yellow, and may have a very offensive odour. The child's general health is always more or less affected, the continual shortness of breath and consequent strain on the heart preventing it from leading the vigorous life of the normal child. A constant tendency to catch cold is a common symptom.

**The Outlook.** At any time an acute lighting up of the chronic symptoms may lead to a fatal broncho-pneumonia.

Where recovery is to take place the chronic cough gradually lessens, the shortness of breath and blueness pass off, the recurrent attacks of acute flare-up or "catching cold" become less frequent, and finally the wheezing, bubbling sounds are no longer heard in the lungs. Anyone, however, who has suffered from chronic bronchitis in childhood needs to take the greatest care to avoid coughs and colds for the rest of his life.

**Treatment.** Everything possible should be done to build up the child's general health. His winters should be passed in a warm, dry climate, and fogs, all sudden changes in temperature and dampness should be avoided. He should be warmly clad, but not too heavily, and should wear woollen or linen mesh underclothes all the year round.

Whenever he catches cold he should at once be put to bed and treated as suggested above under acute bronchitis.

For building up the general health between the acute attacks, the following is a most useful tonic. The dose is for a child of eight to ten :

R

Syrup of the hypophosphites of iron, quinine, and strychnine	.. .. .	1 ounce
Water	.. .. .	4 ounces

Take half to one teaspoonful three times a day after meals.

The child should be out in the open air during the sunny part of every day, but all physical fatigue or severe exertion, such as climbing hills or running

games, should be forbidden. After the finish of a six weeks' course of the tonic suggested above, a two months' course of cod liver oil and malt might be undergone with advantage. From one teaspoonful to a dessertspoonful may be taken twice or three times a day after meals.

**BRONCHO-PNEUMONIA.** Here, instead of affecting distinct lobes of the lung, as in ordinary pneumonia, the inflammation is scattered throughout the whole lung in tiny separate patches. It is always associated with inflammation of the bronchial capillaries.

**Symptoms.** When broncho-pneumonia, as is most usually the case, develops during an attack of bronchitis, or in convalescence from some other disease, the first symptoms are sudden fever, a tight, painful cough, and a greatly increased breathing rate. The pulse rate may also jump up to 140, or more.

**Preventive Treatment.** In every case of measles, whooping cough, influenza, or ordinary acute bronchitis in a child or an old person, the risk of broncho-pneumonia suddenly developing should never be forgotten. Particularly in convalescence must the greatest care be taken that the patient is sufficiently warmly clothed to avoid chilling, yet not so bundled up as to bring on over-heating—as common a cause of chills as being too cold.

**Treatment.** As broncho-pneumonia is a very deadly disease, even in the most capable hands, the physician should be called in at once whenever the early symptoms described above are noted, either in the course of an "ordinary cold on the chest," or during the convalescence from any acute fever. The treatment described under acute bronchitis applies equally to broncho-pneumonia, except that as the latter disease is much the more serious, the condition of the heart may require the administration of strong stimulants, such as alcohol, strychnine, etc., which only the trained physician can use with advantage. Should the child suddenly become blue, and the difficulty in breathing rapidly increase, he may be placed at once in a very hot bath—that is, one which feels very hot, but not scalding, to the nurse's bared elbow—while the head and chest are rapidly sponged with cold water. After five minutes of the bath the patient should be quickly dried and returned to bed.

During early convalescence the diet should consist largely of vegetable soups, chicken broths, custards, junkets, and similar light foods. The patient should not be allowed out of bed until all fever has disappeared for several days.

The patient should be looked upon more or less as an invalid for the next three months, during which time his general health should be built up with plain, nourishing food, plenty of sleep, a course of cod liver oil emulsion, and an iron tonic. From fifteen drops to half a teaspoonful of the syrup of the hypophosphites of iron, quinine and strychnia, taken three times a day, give excellent results in these cases. As tuberculosis sometimes follows on prolonged convalescence in broncho-pneumonia, any persisting lung symptoms should be brought to the physician's notice immediately.





A MEDIEVAL DISPENSARY  
(From a MS. of the 12th or 13th century.)

**BRONCHOCELE** or goitre is an enlargement of the thyroid gland, a common disease in Switzerland, the Italian Alps, and in Derbyshire and Gloucestershire in this country. The disease affects women far more often than men. (*See* GOITRE.)

**BRONCOPHONY** is a resonant sound heard by the physician through a stethoscope applied to the chest, when the patient speaks.

**BRONCHORRHŒA** is the term applied to a form of bronchitis accompanied by profuse and unusual liquid expectoration.

**BRONZED SKIN.** This condition occurs commonly in Addison's disease, and may sometimes be seen in diabetes, exophthalmic goitre, and Hodgkin's disease. In Addison's disease the colour ranges from a light yellow to a dark brown. It usually begins on the face and hands. It is generally the first sign of the disease to attract attention.

**BROOM** is used in medicine as the infusion of dried broom tops. Dose, one to two fluid ounces; or as the succus (or alcoholic juice) of the fresh broom tops, dose one to two teaspoonsful.

Broom is a powerful diuretic, and is much used combined with other drugs, where there is dropsy from either chronic Bright's disease or heart disease.

Where the kidney is acutely inflamed the drug should not be used, as it may have an irritating effect on the cells lining the tubules in the kidney.

Besides its chief diuretic active principle scoparin, broom also contains sparteine, which has a slight effect on the heart, somewhat similar to, but not as powerful as that of digitalis.

**BROW AGUE.** A popular name for neuralgia of the eyebrow and forehead.

**BRUISES.** The colour of a bruise is due to the blood which has escaped from the vessels into the surrounding tissues. Usually at first a bluish-black, this fades to brown and then to a dappled yellow, as the blood-colouring matter is absorbed.

**Treatment.** To prevent the further escape of blood into the tissues, an ice bag or a series of towels wrung out in cold water should be placed over the part. The ordinary lead water and opium lotion poured on a handkerchief and then bandaged loosely over the bruise is a favourite home remedy. If the skin is broken and oozing is taking place on the surface, wash the part well with running water for five minutes and then dust it thickly with a powder made from

equal parts of acetanilid and zinc oxide and cover lightly with a dry bandage.

**BRUIT.** An abnormal sound heard through the stethoscope in the heart, arteries or veins in certain diseases. In chlorosis a soft continuous hum is sometimes heard when listening over the veins of the neck.

**BUBO.** An inflammatory swelling or abscess in the groin due to inflammation of a lymphatic gland in that region, usually from venereal disease or plague. (*For treatment see CHANCRE and GONORRHOEA*).

**BUBONIC PLAGUE** is one of the three varieties of plague, the other two being the pneumonic and the septicaemic types. (*See PLAGUE*.)

**BUCHU** is obtained from the dried leaves of a South African plant. It has a strong aromatic odour and a somewhat pungent taste. The chief preparations are :

Infusion of buchu ..	..	Dose, one to two fluid ounces
Tincture of buchu ..	..	Dose, one-half to one drachm

The chief medicinal value of buchu comes from its contained oil, which has a stimulating diuretic effect on the kidneys, while at the same time it acts as a disinfectant to the urine itself and the urinary passages, including the bladder.

The drug is most commonly used together with other diuretic and urinary disinfectants in inflammations of the bladder and in gonorrhœa.

**BUGS.** *See* BED BUGS.

**BULB** is another name for the medulla oblongata, the lower part of the brain, which is continued into the spinal cord.

**BULBAR PARALYSIS** is a disease in which difficulty in speaking and swallowing are the chief symptoms. In its acute form it may come on suddenly in a few minutes, owing to bleeding into the bulb or hindmost part of the brain



BROOM IN FLOWER

Hinkins

(medulla), or it may develop rapidly in a few days. Both of these acute forms are extremely rare.

Chronic bulbar paralysis mostly affects persons over forty or fifty years of age, but it sometimes comes on earlier in life. It begins very gradually. The patient finds himself speaking indistinctly and experiences fatigue when he talks for some time. The principal difficulty is with the sounds *ch*, *d*, *g*, *k*, *t*, and *th*. The tongue grows weak and twitches. Then the lips are more or less affected so that there is difficulty in kissing, blowing, or whistling. Speech becomes increasingly indistinct, as other parts are involved in the paralysis, and finally the patient can only mumble. At the same time the power of swallowing grows weaker. The tongue cannot push the food backward, and the patient may have to use his fingers for the purpose. Saliva dribbles from the mouth. Later on food may get into the back of the nose or into the larynx, and in the latter case, as the patient cannot cough it out, broncho-pneumonia may develop. Sooner or later the heart weakens.

The disease is very fatal and the patient may die within a couple of years from one complication or another.

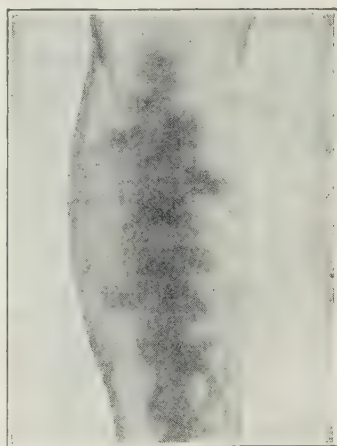
The food must be semi-solid or fluid. The patient must take pains to prevent it from getting into the larynx. When swallowing becomes very difficult he should be fed through a stomach-tube.

**BULIMIA.** See BOULIMIA.

**BULLET WOUNDS.** Gunshot wounds in this country are more commonly caused by small shot than bullets. Wounds with the modern small hard bullet travelling at great speed are not so much bruised and torn as with the older round leaden bullet. The former, however, often cuts through blood-vessels, and the danger of bleeding is greater.

A bullet is practically sterilised by the great heat of the explosive, and it is not likely to infect the wound unless some shreds of the clothing are carried in. Consequently when it remains in the body surgeons often do not trouble to remove it when it cannot be easily located. Provided the external wound is kept clean and aseptic it will heal, as a rule, without dangerous complications.

The symptoms are (1) Shock, which may be trifling or very great. Shock is often profound when a bullet fractures a bone or enters any of the large cavities of the body. (2) Pain varies much in degree. When a bullet lodges near the skin and presses on the nerves the pain may be intense. (3) Bleeding



BRUISED LEG, SHOWING BLOOD IN  
SURFACE TISSUES  
From Guy's Hospital.



is not generally serious. But if a large vessel is opened the patient rapidly bleeds to death. Secondary hæmorrhage (bleeding) which arises some time after the infliction of the wound is not nearly so frequent now as when the old large bullets were in use.

**Treatment.** Before a doctor comes nothing should be done beyond placing a pad of antiseptic gauze over the wounds of entrance and exit of the bullet. Keep the patient at rest and send at once for a surgeon, or if he has to be removed to a surgery or hospital do it with the utmost gentleness.

When a large vessel bleeds externally try to stop bleeding by pressure with the finger. (*See under BLEEDING.*) If the bleeding wound is in an arm or leg apply a tourniquet. This may be done by tying a handkerchief round the limb above the wound, pushing a stick under the bandage and twisting it until the blood ceases to flow. Care must be taken not to twist too much and thus injure the tissues.

The surgeon on arrival will put pads of antiseptic gauze on the wounds, shave the skin, wash the part with soap and water, disinfect the skin with carbolic acid lotion 1 in 40 or perchloride of mercury 1 in 2,000. He will then remove the pads, cleanse the wounds with one of the antiseptic lotions, dry them, apply dry antiseptic gauze, and cover with cotton wool.

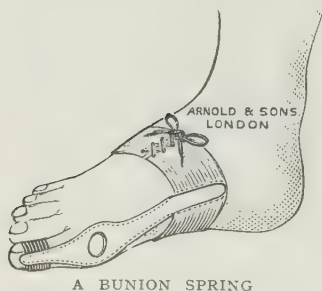
In revolver wounds the bullet is larger, fired from short range as a rule, and may carry in some shreds of clothing. When the powder charge is small the bullet may remain in the body. In this case the same treatment as detailed above is carried out, but all foreign bodies are removed, the wound irrigated, and a drainage tube inserted. The bullet is to be removed when practicable. In each case the surgeon will decide whether to extract it or leave it.

If there is much pain the surgeon may give a hypodermic injection of one-sixth to one-quarter of a grain of morphia.

If there is much shock wrap the patient in blankets and put hot-water bottles to the feet. Keep the head low. Give a little whisky-and-water or hot coffee, while awaiting the surgeon's arrival.

**BUNIONS** are swellings over joints, usually on the toes, due to ill-fitting boots or other constant pressure. The resulting irritation causes thickening of the skin, and in some cases extra growth of the underlying bone.

**Treatment.** The first step towards a cure of the bunion is the removal of the source of the irritation. It may be necessary to have the boot-maker make a special boot so that all pressure can be removed from the inflamed part. To reduce the inflammation tincture of iodine may be painted on, one or two coats nightly for three or four nights. When the part begins to feel more painful under the treatment stop the iodine for several days. Short periods of



A BUNION SPRING



counter irritation of this sort may in early cases finally cause the swelling to subside. If the deformity is at all pronounced, however, a metal splint may have to be worn to pull the deformed toe back into place. A common form supplied by many instrument-makers consists of a partial metal sole, going under the ball of the foot with a strong support extending along the inner line of the big toe, to which the toe may be strapped to keep it in position.

In advanced cases the only hope of cure lies in an operation, the surgeon removing a portion of the excess of bone and returning the deformed toe to its proper position.

### BURNS, AND SCALDS.

When the injury is caused by dry heat or flame it is called a burn; a scald is the result of moist heat. Six degrees of burn are described:

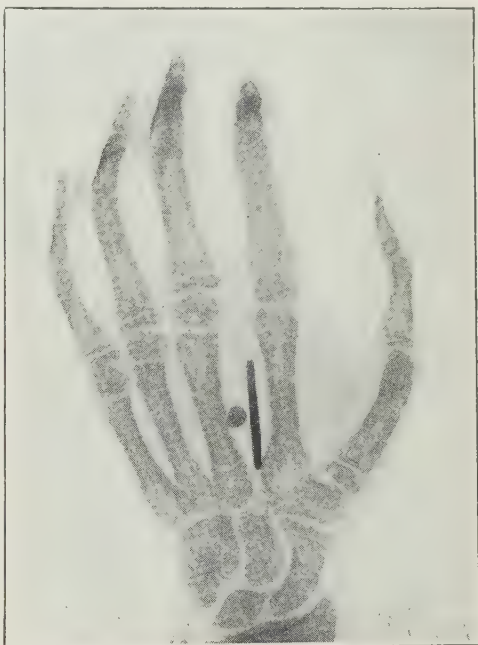
- (1) Simple redness.
- (2) Greater redness and blistering, but no scar on healing.
- (3) Outer coating only of skin destroyed, leaving the ends of the nerves in the skin exposed. Scar remains after healing.
- (4) Destruction of all the layers of the skin. As the nerve endings are also destroyed in this degree of burn there is much less pain than in the third degree burn. Deep and permanent scar.

(5) Tissues underlying skin destroyed. Deep scarring, with deformity.

(6) Total destruction of part.

**Symptoms.** The symptoms may be divided into the instant pain and the collapse, or shock which may follow in from a few moments to some hours after the receipt of the injury. Children and old people are apt to suffer severely from shock, even after slight burns.

A second degree burn over a large surface of skin is apt to cause more shock than a fifth or sixth degree burn with charring confined to a localised area, such as a hand or foot. In any severe burn, fever, coming on usually on the third day, and septic inflammation, with the formation of matter and sloughs are to be expected,



X-RAY PHOTOGRAPH OF A BULLET IN THE HAND  
A piece of wire has been inserted as a guide to the operator  
in removing the bullet.  
Radiograph by Mr. F. H. Glew.

**Treatment.** In first and second degree burns usually all that is needed is a coating of sweet oil and a light bandage to protect the part from exposure to the air. For deeper burns the part should be gently sponged with boracic lotion, one part of boracic to twenty parts of water, then dried; and after all charred fragments of clothing, etc., have been removed, it should be completely covered with a piece of fine linen spread an eighth of an inch thick with boracic ointment.

In modern surgery watery applications have largely taken the place of the old oily remedies in severe burns.

The once favourite carron oil, composed of linseed oil and lime-water, is said to favour subsequent sepsis (blood poisoning).

Sir Lambert Ormsby regards the three following methods of dressing burns as the most successful:

First cut away all tags of tissue, prick any blisters, and douche with a warm salt and water, or mild antiseptic solution. The patient may be put under light anæsthesia, if desirable, to preserve him from further shock.

The part being cleansed, cover it with strips of lint soaked in a solution of picric acid (picric acid, half drachm; absolute alcohol, one ounce; distilled water, fourteen ounces). Over the lint place a sheet of cotton wool, and retain it in position by a broad bandage. Renew the dressing occasionally.

At the end of ten days substitute a dressing of lint soaked in equal parts of boric lotion and hydrogen peroxide. This should be renewed daily, up to the time of complete recovery.

If matter forms douche the part frequently with boric lotion (fifteen grains of boracic acid to the ounce of water), or other mild antiseptic.

When only a small area has been burned the picric acid dressing may be followed at the end of a week (provided there are no signs of blood poisoning) by a weak zinc oxide ointment, spread on protective tissue. But if suppuration appears, douche as recommended above, and substitute the boric and peroxide of hydrogen lotion for the zinc ointment.

When using picric acid careful watch should be kept for signs of picric acid absorption, such as vomiting, diarrhœa, blood in the urine, fast pulse, and raised temperature. Should any of these symptoms occur, at once stop the use of the picric acid dressings.

Aluminium acetate is another dressing of considerable use for smaller burns, especially of the hands and feet. Gauze is soaked in a 1 per cent. watery solution of aluminium acetate, and applied to the injured part. It is occasionally moistened with the solution, and need not be removed for several days. This dressing greatly relieves pain.

A third very successful method is to cover the burned part with cargin, which is the sterilised omentum of the ox. The cargin clings to the surface when smoothly applied. Over it is placed a layer of lint soaked in weak

boric acid solution. The gargle is left on the part, but the lint is changed three times daily.

Pain may be relieved in a remarkable degree by this dressing, which prevents the access of micro-organisms, and at the same time allows the secretions from the injured surface to pass through. A great advantage of this dressing is that the part in immediate contact with the wound need not be changed, thus avoiding disturbance of the process of repair.

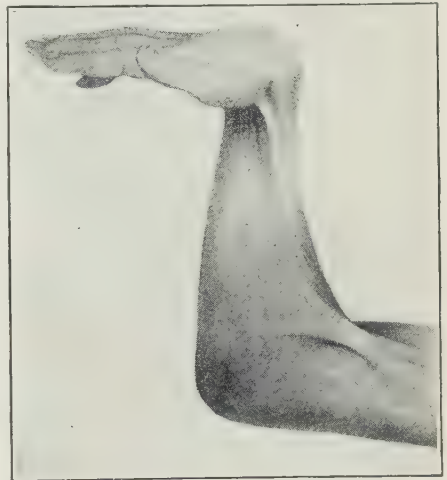
In any case of severe burning the patient should be put to bed at once. Hot water bags should be put at the feet, and to ward off shock a wineglassful of very hot coffee may be given every half-hour until the doctor's arrival. Shock is the cause of many deaths after extensive burns. It is particularly fatal to young children, as well as old or feeble persons.

When a large area of the body has been burned, with the consequence of profound shock, Sir Lambert Ormsby recommends putting the patient into a bath of hot salt solution. This is made by adding two table-spoonsful of salt to each gallon of water. The temperature of the bath should be 98 to 100 degrees. The patient should be put directly into a bath of this sort without any attempt being made to remove the clothing. When this is softened by the water, the patient is gently undressed, and is kept in the bath for hours, or until recovery from the shock is manifest.

When the patient can swallow he may be given two table-spoonsful of whisky in two ounces of hot milk.

After he has been put to bed, as a further preventive of shock, four to six ounces of warm salt solution may be injected into the bowel hourly until a marked improvement in the general condition is restored.

Prevention of subsequent deformity is a question of great importance in deep burns requiring prompt and constant attention from the surgeon. The commonest site of contractures following burns are the neck, the face, and at the joints of the limbs. To prevent these the limb or head must be kept in such a position that the tendency to contracture is combated. Thus in a burn at the under surface of the knee the leg is extended and kept straight by means of a splint until the wound is healed.



CONTRACTION OF THE ARM AFTER SEVERE  
BURN  
From the Bartholomew's Hospital Museum.

**BURSÆ** are little cavities, in fibrous structures containing fluid. They are present at the knee-cap, the elbow-joint, and in many other situations where muscles and tendons press against bones or against one another.

**BURSITIS** is the term applied to inflammation of one of the bursæ, or natural lubricating cups placed in connection with certain structures of the body, to prevent friction during movement. The commonest bursa to become inflamed is that in front of the knee. The condition commonly known as "housemaid's knee" is due to a chronic inflammation of this bursa, with the formation of fluid in the cavity.

Other common sites of bursitis are over the point of the elbow, "miner's elbow," and over a bunion.

Occasionally the bursitis is acute, the skin over the part becoming reddened, while the whole area feels hot, swollen, and very painful. This inflammation may go on to abscess formation, or may gradually subside, clearing up entirely, or a condition of chronic bursitis may gradually develop.

**Treatment** consists of complete rest of the part, and the application of hot poultices. If an abscess forms in the bursæ, this, of course, must be opened and drained.

**Chronic Bursitis** is much more common than the acute variety.

In some cases the only symptom noticed is a gradual swelling over the region, such as the front of the knee cap or the point of the elbow, at which the bursa is situated. There may be slight pain on pressing over the part, but there is no continuous aching nor heat or redness of the skin. On pressing alternatively with two fingers over the part, a distinct feeling of fluid under the skin can be noted. In some cases, in addition to fluid there are small hard bodies made up of fibrous tissue floating loose in the sac of the bursa.

**Treatment.** In the early stages absolute rest to the part, together with repeated paintings with tincture of iodine, or blistering will sometimes lead to a speedy absorption of the fluid and allaying of the inflammation.

The painting with iodine should be repeated until the skin is tender, but not to the point of causing actual inflammation. If these measures fail the surgeon may (under strictest antiseptic precautions) draw out the fluid through a sterilised hollow needle, though too often the fluid reaccumulates.

In some cases the only effectual treatment is an operation, the surgeon cutting into the bursa, and treating it like an abscess with free drainage, until the walls of the sac grow together, thus leaving no cavity to fill with fluid.

**BUTTERMILK** is sometimes used in the feeding of infants where there is a difficulty in digesting the hard, coarse curd of ordinary milk. Being less fatty than ordinary milk it is sometimes useful in conditions such as consumption of the bowels where fats are likely to be not well borne. Whereas the proteid and sugar content is the same as in ordinary cow's milk, the fat is reduced from over 3 per cent. to about  $\frac{1}{2}$  of 1 per cent.



## C

**CACHEXIA** is the name given to the extremely debilitated condition occurring in serious and prolonged diseases, such as cancer.

**CADAVERIC RIGIDITY**, or Rigor Mortis, is the stiffness of the body which comes on soon after death owing to clotting of the fluids. It usually begins five or six hours after death, but sometimes much sooner if, immediately prior to death, the person has been in good health, as in soldiers killed in battle. Sometimes it sets in much later. It generally lasts for two or three days, but occasionally passes off in a few hours. By these changes in the body a doctor can sometimes approximately estimate the time at which death occurred.

**CAECUM.** The blind end or pouch at the commencement of the large intestine, formed by the small intestine opening into the side of the large bowel some few inches from its commencement (*see diagrams on pages 63 and 127*). From this part the vermiform appendix arises.

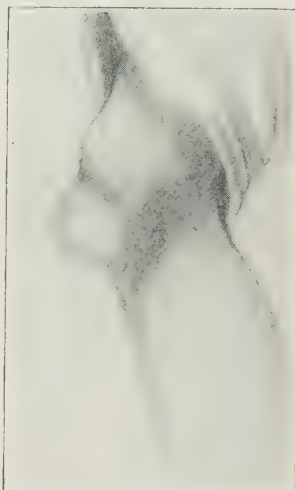
**CAESARIAN SECTION**, the operation of cutting through the anterior abdominal wall and uterus to deliver the child, when through deformity of the natural passages, or from other causes, normal delivery is impossible.

Cesarian section is sometimes performed with a view of saving the unborn child's life when the mother suddenly dies, or is killed at full term.

**CAFFEIN** is an alkaloid found in the dried leaves of tea, or the dried seeds of coffee. The dose in medicine is one to five grains. Preparations in common use are, caffein citrate, dose 2 to 10 grains, and effervescing caffein citrate, dose 60 to 120 grains.

The chief action of caffein, whether taken as a drug or in tea or coffee, is to stimulate the mental activity. All of the subject's faculties become on the alert, his imagination is keener, and his thoughts work faster.

If the dosing is continued, as in prolonged, excessive tea drinking, an overwrought state of the whole nervous system results. Caffein has also a marked diuretic effect on the kidney tissues, increasing the flow of urine. The drug is



BURSITIS OR HOUSEMAID'S KNEE

therefore much used in heart dropsy, and other conditions in which it is desired to deplete the body of fluids through the kidneys. The effervescing caffen citrate is frequently prescribed here.

It should be noted, however, that as the diuretic action is local, the drug acting directly on the kidney tissues, caffen is generally contra-indicated when dropsy is due to kidney disease.

Caffen also acts directly on the heart muscle, stimulating this and increasing the rate of the heart beat. The drug, therefore, is frequently used in heart disease as a heart stimulant, either alone or combined with other heart stimulants, such as strychnia.

When phenacetin is pre-scribed for headache, caffen citrate two grains, may be combined with it with advantage, the caffen counteracting the somewhat depressing effect of the phenacetin on the heart.

Tea contains on an average from three to five per cent. of caffen, coffee from one third to one half of that amount.



THE CAJUPUT PLANT

**CAISSON DISEASE**, or Divers' Paralysis, is an ailment sometimes attacking workers in caissons or diving bells, where the air pressure is abnormally high. Hard drinkers and fat men are the most likely sufferers. The treatment consists of immediately returning the patient to the high pressure, and then very gradually reducing the atmospheric pressure down to normal.

**CAJUPUT OIL** is obtained by distillation from the leaves of an Indian plant. The oil has a greenish colour, with a distinctive aromatic colour, somewhat resembling that of camphor.

The dose of cajuput oil, when taken internally, is one half to three minims.

The spirit of cajuput, five to twenty minims, is also sometimes used internally in indigestion mixtures.

Taken internally, the oil causes increased flow of saliva in the mouth, and at the same time stimulates the nerves of taste and thereby the appetite. Its effect in the stomach is to excite an abundant flow of gastric juice,

and to encourage the normal muscular movements of the organ, thus aiding digestion. The oil has also a valuable carminative action—that is to say, it helps in expelling accumulations of gas.

The oil of cajuput is sometimes combined with purgatives as it has a tendency to prevent colic, and at the same time aid in the expulsion of wind in the intestine.

Externally, cajuput oil, usually diluted with some less irritant oil, is a useful counter-irritant in rheumatic pains, chilblains, lumbago, etc.

### CALABAR BEAN

is constantly used in eye surgery on account of the power its alkaloid physostigmine, or eserine, has of contracting down the pupil. The drug may be used as the sulphate of physostigmine (or eserine), dose 1-60th of a grain to 1-20th, usually administered hypodermically,

or lamellæ, each containing 1-1,000th of a grain of the sulphate, may be placed in the eye. Besides contracting the pupil physostigmine diminishes the internal pressure, or tension in the eyeball itself. Hence the drug is frequently used in glaucoma.

**CALAMINE** is another name for zinc carbonate. The common calamine ointment, which is much used in certain skin diseases for its slight astringent effect, is prepared by mixing one part of calamine with five parts of benzoated lard.

**CALCIUM** is used in medicine as prepared chalk, ten to sixty grains, and precipitated chalk, ten to sixty grains. Both are prepared from the carbonate of calcium. The action of the two is practically the same.

Externally prepared chalk is much used as a dusting powder in irritated and moist conditions of the skin, as in moist eczema. Combined with other drugs, prepared chalk is often taken internally in acute diarrhœa. A favourite mixture here is the chalk mixture of the British Pharmacopœia, one to four teaspoonsful in slight diarrhœa in children.

Calcium oxide, or lime and calcium hydroxide, or slaked lime, are sometimes used in medicine,



THE CALABAR BEAN

Lime water is sometimes mixed with milk to render its curd more flocculent and easier to digest. Lime liniment, or linimentum calcis, dabbed on scalds or burns has a valuable soothing and astringent effect. Lime is a valuable antidote for acid poisoning.

Calcium phosphate, or phosphate of lime, is sometimes used in medicine in rickets and wasting diseases in infants. It is usually prescribed in the form of the syrup of the lacto-phosphates of lime, one half to one teaspoonful doses. This preparation is of special value in generally rundown conditions, where the system finds difficulty in abstracting from the foods eaten the calcium phosphates needed in the development of bones.

Calcium chloride is sometimes given internally in chilblains (dose 5 to 15 grains three times a day), on account of its power of increasing the coagulability of the blood. It also has been used for the same purpose in internal bleeding, but its usefulness here is not fully established.

**CALCULI, or STONES**, occasionally develop in the gall bladder, in the kidney, or in the urinary bladder. Calculi may vary in size from that of small sand particles up to bodies as large as hens' eggs, or even larger.

A foreign body, such as a bit of silk used for tying up an artery in an operation, which has found its way into the bladder, may result in the formation of a calculus or a stone, the stony material being laid down layer upon layer around the foreign body.

The three calculi most commonly found in the bladder are (1) the uric acid ; (2) the oxalate of lime and (3) the mixed phosphate stones. The former two usually begin to develop in the kidney, and then passing down along the ureter into the bladder, continue to develop in size as a result of new layers of stony materials being laid down on their surface.

Gall stones, usually coloured a greenish brown from the bile colouring matter they contain, are made up chiefly of cholesterin. They may vary in number from one largish one to scores of smaller ones.

When a gall stone leaves the gall bladder and passes into the bile passages, there is usually severe pain (biliary colic).

Calculi or stones in the kidney are most commonly composed of uric acid, though oxalate of lime stones, and stones made up of urates, are also occasionally found.

A phosphatic kidney stone is sometimes found in cases where the urine has stagnated in the kidney and turned alkaline from decomposition. (*See under headings, GALL STONES, BLADDER, and KIDNEY DISEASES.*)

**CALLUS** is the substance formed at the seat of fracture of a bone. It holds the ends of the broken bones together, and is itself ultimately converted into bone.

**CALOMEL**, or mercurous chloride is a white, practically tasteless, powder, frequently used in medicines for its purgative action. Calomel is usually given







## CALCULI, OR STONES OF THE KIDNEY AND OTHER ORGANS

Calculi may vary in size from sand particles to bodies as large as hen's eggs. Above, the principal types of stones are shown. 1 and 1a are phosphate stones; 2 and 4 are oxalate of lime with uric acid; 3, oxalate of lime. Biliary calculi are shown in 5. Sections of kidneys in which large stones have been deposited are shown in 7 and 8, the latter showing the stones *in situ*. The stones themselves are shown in 6.

From drawings in the Gordon Museum, Guy's Hospital.

at night, dose from one-half a grain to five grains, when the constipation is accompanied by headache, heavily coated tongue, and feeling of fulness in the liver region.

In cases where congestion of the liver is suspected, calomel is usually an excellent purgative. A dose of "black draught" (compound mixture of senna) is usually given in the morning following. (See BLACK DRAUGHT.)

Calomel, the *mercurous* chloride, should not be confused with corrosive sublimate, or *mercuric* chloride, which is a deadly poison.

**CALORIMETER.** A contrivance by which the quantity of heat given off by the body is measured. It consists of a double-walled chamber, in which a living person or an animal may be enclosed.

The space between the inner and outer walls is filled with a known quantity of water. Outside this is a layer of non-conducting material to prevent loss of heat. The temperature of the water is taken at the commencement and the end of the experiment, and from these data the heat given off by the occupant of the chamber can be calculated.

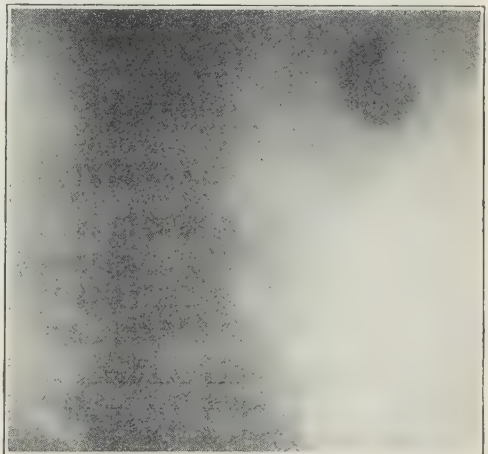
**CALUMBA** is a vegetable bitter, used in medicine for its stimulating action on the stomach. The drug is obtained from the root of an East African tree. Common preparations used in medicine are :

Infusion of calumba—dose, one half to one fluid ounce  
Tincture of calumba—dose, one half to one fluid drachm

Calumba is much used in tonic appetisers, because it stimulates the nerves of taste, causing a reflex stimulation of the blood vessels in the stomach wall, and thus encouraging a free outpouring of the gastric digestive juices into the stomach.

Besides increasing the appetite, calumba has a carminative action, strengthening the normal, churning movements of the stomach, which play an important part in the digestion of food.

In atonic and nervous dyspepsias (see under DYSPEPSIA), bitters, such as calumba and gentian, are of much use in encouraging the appetite and strengthening the digestive powers. On the other hand, should the indigestion or loss of appetite be due to active irritation of the stomach, such as gastritis or gastric ulcer, the bitters would only increase the irritation,



X-RAY PHOTOGRAPH SHOWING A LARGE STONE IN  
THE RIGHT KIDNEY  
The presence of this stone was afterwards verified by  
operation.

If used too continually or in too strong doses, calumba and other similar bitters may set up first stomach irritation, and later chronic, intractable dyspepsia.

**CALVES' FOOT JELLY** is a pleasant form in which to give light nourishment. But it is a mistake to suppose that it is nearly as nutritious as meat, fish, or eggs.

To prepare it, put two calves' feet in a gallon of water, and boil down to one quart. Strain, and when cold remove all the fat.

The nutritiousness can be greatly increased by now adding the whites of six eggs well beaten, half a pound of loaf sugar, and the juice of four lemons, or half a pint of sherry. The mixture is boiled for a few minutes, constantly stirring, and is then strained through flannel.

**CAMP FEVER** is one of many names given to Typhus Fever (*which see*).

**CAMPHOR** is a pungent crystalline substance obtained by the distillation of the wood of the camphor laurel, an Eastern tree. The commonest preparations used in medicine are:

Camphor water—dose, one to two ounces

Spirit of camphor—dose, 5 to 20 minims

The compound tincture of camphor (paregoric)—dose, one  
half to one fluid drachm

The liniment of camphor and the compound liniment of camphor

Rubbed directly on the skin camphor has a stimulating effect, dilating the superficial blood-vessels, and leading to an immediate feeling of warmth. As this passes off partial loss of sensation in the skin follows. It is for these effects that camphor liniments are so commonly used when a counter irritant action is required, as in chronic rheumatism, sprains, bruises, neuralgia, etc.

Internally camphor has a stimulating effect on the stomach, increasing both its muscular movements and the out-pouring of gastric juices.

It is also a heart stimulant frequently prescribed when the pulse is thin and feeble. As it has a mild diaphoretic action on the skin camphor is added to many cough and cold mixtures.

The compound tincture of camphor, or paregoric, is a common household remedy for colic and diarrhoea. It should not be forgotten that this preparation contains opium.

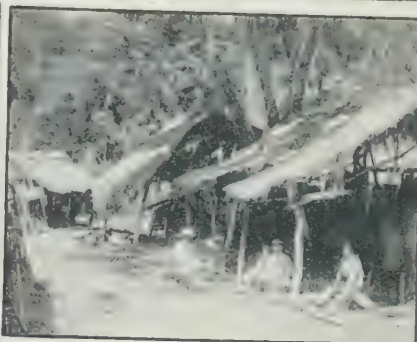
**CAMPHOR POISONING.** The chief symptoms of overdosage of camphor are giddiness, languor, dimness of sight, and sometimes delirium.

As treatment give an emetic of two teaspoonsful of pure mustard in a large tumbler of warm water. Summon a doctor who will, if necessary, empty the patient's stomach with a stomach-tube. Then apply to the abdomen cloths wrung out of hot water, and give ammonia to inhale. If the patient is collapsed, inject into the rectum an enema of warm water six ounces and brandy one ounce.

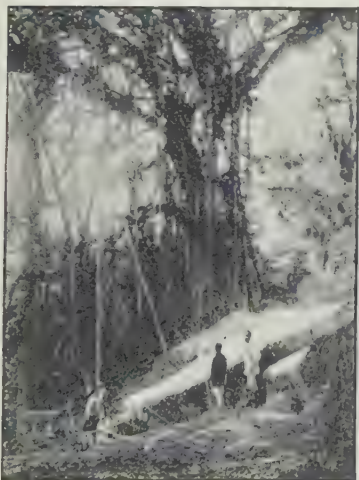




*The Camphor Flower & Fruit*



*Camphor Gatherers in East Formosa*



*Camphor Stills in the Heart of Formosa*



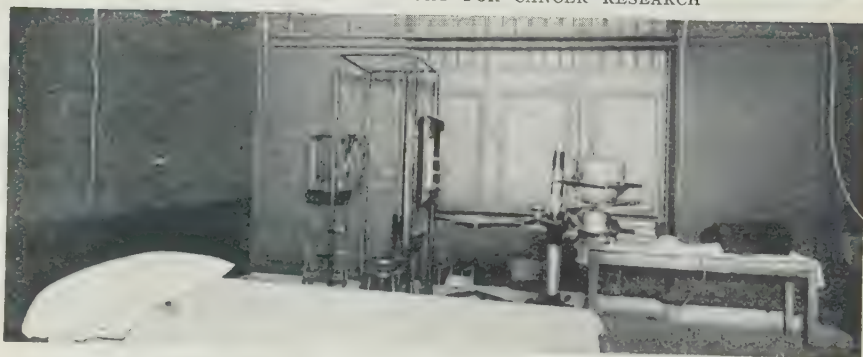
*A Giant Camphor Tree in California*

#### THE CAMPHOR TREE AND CAMPHOR PREPARATION

The camphor of commerce is prepared from the Camphor Laurel, a tree growing in Formosa, Japan, and Central China. The wood is cut into small chips and distilled with water, the camphor vapour coming over with the steam and being condensed on straw in the head of the still. It is refined by heating in glass vessels. The collection and distillation of camphor is one of the staple industries of Formosa. Camphor has always been highly valued in the East, but it was introduced into Europe by the Arabs. Besides its medicinal uses it is largely used in the manufacture of celluloid (which is a compound of cellulose and camphor), smokeless powder, and varnishes. A synthetic camphor has been made from turpentine.



THE GENERAL LABORATORY FOR CANCER RESEARCH



X-RAY DEPARTMENT FOR THE TREATMENT OF CANCER



A PATIENT UNDERGOING X-RAY TREATMENT



ELECTRIC SCHNEE BATH TREATMENT

## CANCER.

**CANCER** is the general name given to malignant tumours of all kinds—that is, tumours which have the characteristics of growing again when removed, of re-appearing as secondary growths in organs perhaps far distant from that attacked by the original growth, of leading to wasting and great general weakness, and of eventually killing the patient.

Cancers may be divided into two main groups.

(1) The carcinomata or true cancers, which are made up largely of epithelial cells, resembling those found in the skin and the various glands of the body, and

(2) The sarcomata, tumours composed mainly of cells resembling immature or not fully developed connective tissue cells.

In the true cancers, or carcinomata, the cancer cells are grouped in little pockets, or alveoli, being bunched together in masses with no fibrous tissues separating them one from the other. The cells of a sarcoma, on the other hand, lie in a delicate network of fine connective tissue fibres which separate individual cells from their fellows.

Blood vessels are also found running between the cells themselves in sarcoma, whereas in true cancer or carcinoma the blood vessels ramify only through the wall of tissue which hems in each separate mass of epithelial cells making up the cancer.

Different types or varieties of carcinomata are recognised according to the type of epithelial cells they contain.

(1) The spheroidal celled carcinoma, developing in organs such as the breasts, which are made up largely of glandular tissue. Here the cancer cells closely resemble the cells normally present in this particular situation. Where the resulting cancer is hard and firm to the touch, the name "scirrhus" is sometimes applied to it. For example, the hard, firm cancer which so often attacks the female breast is known as a "scirrhus cancer" in contradistinction to the "encephaloid cancer," a term applied to the soft, brainlike fungating growth which is frequently found in the same organ and in several of the internal organs.

(2) Epithelioma or squamous celled carcinoma, the type of cancer which attacks the skin and mucous surfaces which are normally covered by squamous, or flattened, layers of cells.

(3) Columnar-celled carcinoma. Where the cancer attacks a part such as the rectum, which is lined by columnar epithelial cells, the cells of the new growth conform to this type, and the cancer is known as a columnar-celled carcinoma.

True cancer (carcinoma) always shows itself first in some tissue or organ made up largely of epithelial cells such as the breast, the glands of the



stomach, intestine, the epithelial cells covering the tongue or lip, the lining of the womb, or the skin. The secondary growths, which as a result of the primary cancer may develop in some far-distant organ, are nearly always first noticed in the lymphatic glands which collect the lymph from the organ or part originally attacked by the cancer.

True cancer is essentially a disease of middle or old age, being comparatively rare before thirty-five. As age advances the likelihood of cancer developing increases. Women are attacked more than men, one death in seven among women being attributable to malignant disease of one kind or another, and one death in eleven among men. The commonest sites of attack in women are the breast and womb; in men, the stomach, lower lip, and rectum.

#### CHARACTERISTICS OF DIFFERENT TYPES OF CANCER.

**Encephaloid Cancer**, which derives its name from its softness and general resemblance to brain tissue, is much the most deadly form of cancer. Even if removed in the comparatively early stages, it only too frequently recurs within a few months, soon causing a fatal termination. When occurring in the breast, it can usually be recognised from its peculiar soft doughy feeling, its rounded form, and its very rapid development.

Early in the disease the skin over the tumour becomes adherent to it, and shortly after, if operation is delayed, the skin ulcerates, and the tumour breaks through the surface as a fungating and easily bleeding mass. The reason of the great liability of the encephaloid cancer to recur after operation, is that secondary involvement of the lymphatic glands which receive the lymph from the region of the tumour (in cancer of the breast the glands in the armpit and above the collar bone) takes place very early in the disease.

In addition to attacking the breast, encephaloid cancer is the commonest primary cancer of the stomach and liver, and is also sometimes found in the testicle, and other glands.

**Scirrhus Cancer** is characterised by its extreme hardness. It grows rapidly (though not so rapidly as the encephaloid type), and when occurring in the breast, its commonest situation, early becomes attached to the over-lying skin, as well as to the muscular tissues underlying the breast. In addition to the "puckering" of the over-lying skin (the result of the cancer extending to the under-lying cells of the skin), a characteristic sign is a drawing in or retraction of the nipple itself. Instead of the soft, fairly globular outline of the encephaloid cancer, the scirrhus, in addition to being very firm, is usually indefinite or knobly in outline.

As the skin becomes further involved, it first reddens, and then breaks down, an ulcer with hard, ragged edges and a firm readily-bleeding base forming.



In addition to the breast, a scirrhous cancer may attack any other structure which normally is largely composed of glandular epithelium cells, such as the stomach, gullet, etc.

**Epithelioma or Squamous Carcinoma.** The commonest sites of epitheliomata are the skin surfaces and the tongue, lips, penis, and vulva. The growth takes the form of an irregular hardish ulcer, which is tightly bound down on to the part attacked. The base of the ulcer is usually covered with a thin, watery discharge, and bleeding may occur from its surface at the slightest touch. The chief diagnostic difference between an epitheliomatous ulcer and a simple or non-malignant ulcer are the hardness of the former, its fixation to and infiltration of the part on which it grows, and the speedy involvement of the neighbouring lymphatic glands, which early in the course of the disease may be felt as slightly enlarged and distinctly hardened.

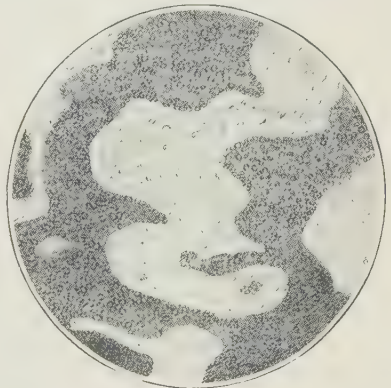
The great danger to life from an epithelioma is that, although the original growth may be on some non-vital spot, such as the face, the secondary growths, which are almost certain to arise, may be in the liver or some other all-important internal organ, and so speedily bring about the death of the patient.

**Sarcomata**, or cancers composed largely of immature connective tissue, may spring from any part of the body when connective tissue fibres are found in health. Whereas the carcinoma or true cancer, is a disease of middle and advanced age, the sarcoma is the most common in early life. Whereas the carcinomata attack chiefly the skin, mucous surfaces, and glandular tissues, sarcomata are most commonly found in bones, sub-cutaneous tissues, and the internal organs. The lymphatic glands and glandular structures of other kinds are also sometimes attacked by sarcomata.

According to the types of the cells which make up the bulk of the tumour, sarcomata may be divided into (1) the round celled, (2) the spindle celled, and (3) the melanotic. In a fourth variety, the myeloid tumours, which develop in the central marrow of long bones, there are large cells of a special type mixed in with the round cells or spindle cells which compose the bulk of the tumour.

The round-celled sarcoma attacks chiefly the bones and their coverings, the internal organs and more rarely the tissues underlying the skin.

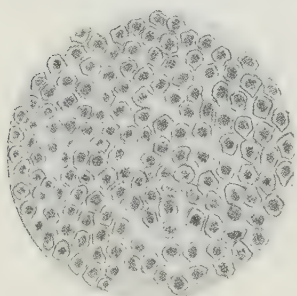
Like true cancers, the growths increase rapidly in size, with perhaps little pain at the start. In other cases, there may be a vague, dull aching, particularly when bone is attacked. Secondary growths, in perhaps distant organs, occur early.



THE CANCEROUS CELLS IN EPITHELIOMA  
OR SQUAMOUS CARCINOMA  
Magnification 100 times.

The spindle-celled sarcoma attacks most commonly the layer of dense fibre tissue covering the long bones. The face bones, the testicle, the breast and the tissues underlying the skin are also occasionally the site of this type of sarcoma.

Spindle-celled sarcomata differ widely in malignancy. In the large-celled type, even complete removal of the growth (as, for example, amputation of the leg for sarcoma of the periosteum covering the head of the tibia, the larger of the two lower leg bones) too frequently is followed by rapidly fatal secondary growths in the trunk. In the small-celled variety there is less likelihood of distant organs being affected, the prognosis always being much better here than in the large spindle-celled growths.



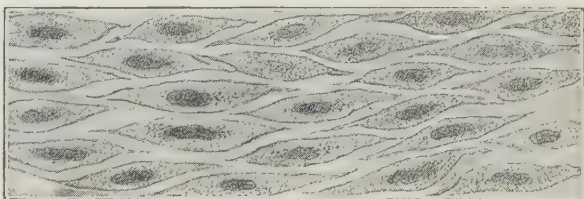
THE SMALL ROUND SARCOMA CELLS  
Magnified 320 times.

**Melanotic Sarcomata** are characterised by their blackish or dark brown colour. This type, one of the most malignant of the connective tissue cancers, only develops in structures such

as the skin, a brown mole, or the choroid coat of the eye.

A brown or black mole on the skin, which has been irritated by attempts at removal, sometimes becomes the site of a melanotic sarcoma. The growth, which develops rapidly, is fairly soft. The great danger of the melanotic sarcoma is the development of secondary nodules at a very early date within the neighbouring lymphatic glands. Too often, although the original growth be speedily removed in what seems to be its entirety, a spread to distant parts has already taken place, and the patient loses his life as the result of the arcomatous growths which rapidly develop at these sites.

**SYMPTOMS IN CANCER.** The chief signs of cancer are a rapidly developing tumour or the formation of an ulcer, with a hard, flattish base, and irregular, hard edges. Contrary to common belief, pain is not a common *early* symptom, though it may

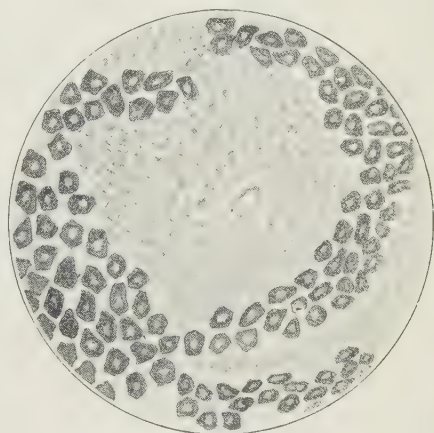


THE SPINDLE-SHAPED SARCOMA CELLS

be very severe in the late stages. Depending on the situation of the cancer there may be bleeding and discharge as well. The symptoms which early in the course of the disease should immediately suggest to the sufferer the possibility of the ailment being cancer are described in detail under the cancers of different regions. (See BREAST, CANCER OF; STOMACH, CANCER OF; WOMB, CANCER OF; *etc.*)

Unfortunately, in no case can the absence of one or more of the most characteristic and common symptoms be taken as conclusive proof that the ailment under suspicion is not a cancer. For example, the lancinating shooting pain, darting through the breast and perhaps down the arm, which is so characteristic of advanced scirrhus cancer of the breast, may be totally lacking until the disease is far advanced. Again, the vomiting of blood, and stomach pain, which are characteristic signs of cancer of the stomach, may not be present until the disease has passed the stage in which an operation can be performed with any hope of a permanent cure. Again, the blood-stained discharge which, persisting continually in a woman past forty, should lead to instant suspicions of cancer of the womb, may not appear for many months after the start of the growth of the tumour.

It would be the height of folly to be brooding constantly over every ache and pain, and seeing in every slight abnormality of the system the undoubted onset of cancer. On the other hand, the characteristic signs of the disease in the various parts of the body which are commonly attacked ought to be known by heart by everyone. With this knowledge, the combination of perhaps two or three symptoms, which alone out of many may be present in the early stages of the disease, will be enough to suggest the patient's consulting a competent surgeon without the least possible delay. If the patient's suspicions are unfounded, and the conjunction of two or three out of the half-dozen or more characteristic symptoms of cancer in that particular region turns out to be a coincidence or due to some trivial cause, no harm has been done. On the other hand, if a cancer is developing, the surgeon should have ample time to remove it in the early and comparatively readily curable stages. If the patient had waited until the presence of *all* the characteristic signs of cancer had convinced him of the deadly nature of his disease, in all probability the time in which a radical operation, which might have saved his life, could have been performed, would have been long since passed.



CELLS MAKING UP THE TUMOUR IN MELANOTIC  
SARCOMA  
Magnified 100 times.

**THE CAUSE OF CANCER.** Despite years of unceasing efforts by scientists in the research laboratories all over the civilised world, the cause of cancer, the most deadly scourge of mankind, remains a mystery. Various views as to its origin have been put forward, some authorities inclining to the

belief that cancer is due to the action of a microbe, others believing that the causative influence resides in the body cells themselves. The one factor which can be proved to bear a causal relation to cancer is long continued irritation of the tissues. For example, numerous instances have been recorded in which the irritation set up by a broken tooth or resulting from the constant smoking of a clay pipe has led to cancer of tongue or lip respectively.

As further illustrating the important part chronic irritation of living tissues plays in the formation of malignant disease, the abdominal cancers so common among the natives of Cashmere may be cited.

Cancer of the skin of the abdomen, which is practically unknown in Europe, is one of the commonest forms of the disease in Cashmere, where the natives commonly carry over their stomachs to keep them warm a little oven containing burning charcoal. The irritation resulting from constantly repeated burns leads to the skin at this site becoming peculiarly liable to cancer growth. Again, cancer of the floor of the mouth is also very rare among women of this country. In Ceylon and India, however, where the native women chew the betel nut and sleep with the plug resting on the floor of the mouth, cancer developing in this spot, as the result of the constant irritation of the tissues, is very common.

**CANCER AND OPERATION.** Sometimes one hears it said that an actual cure of cancer can never be obtained by operation.

Nothing could be more false than this.

If a widespread and thorough operation is carried out in the early stages of the disease, the patient in many cases may live to a ripe old age and then die from some entirely different ailment, no secondary growths whatever developing as a result of the original cancer. In addition to the proof of this fact to be obtained from the records of any large hospital, the thousands of operations for removal of cancerous growths at all stages of their development which have been performed (with all the attention to detail that could possibly be afforded to the human being) on mice at the Imperial Cancer Research Fund laboratories, afford conclusive evidence. Although, of course, a complete cure cannot be hoped for in every case, these experimental operations have shown conclusively that profound relief (evidenced by the absence of recurrence for periods equal to one-third of the total life of the mouse) may be confidently hoped for if the operation is undertaken in time.

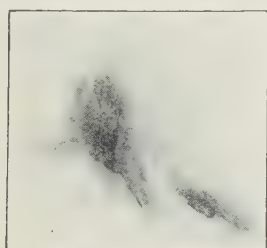
The dangerous contentions of self-interested quacks that removal by operation not only does not prolong life, but even encourages the development of secondary growths, have thus been directly negated. More than this, these experiments have afforded definite proof that the earlier the removal of the original growth, the greater the possibility of non-recurrence.

At the Imperial Cancer Research Fund laboratories it has been proved experimentally that if one introduces into the tissues of a mouse living cancer

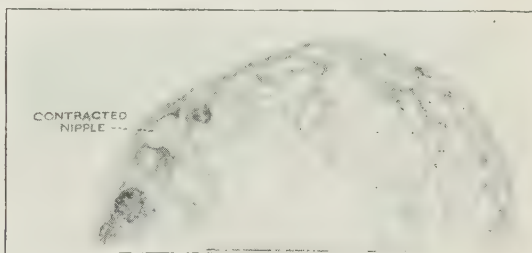


cells from another mouse of the same species, the introduced tissue will continue its life in its new situation, and eventually develop into a cancer which will kill its host. It has also been proved conclusively that if shortly after this introduced cancer has taken root, it is bodily cut out and removed, further cancerous growth at that site can be prevented. These experiments by themselves, in that they have settled, once for all, that the earliest possible surgical removal in man is the only rational treatment as yet evolved, should, when their significance is fully understood by the public, be the means of saving thousands of human lives every year. They have already caused leading surgeons to revolutionise their practice in regard to cancer of the tongue, for example, and to remove as cancerous at once growths which formerly they would simply have kept under observation for months as not cancerous in themselves, but only likely to turn to cancer.

If the actual cause of cancer is still an unsolved mystery, the painstaking and minute experiments on animals which have been carried out in all parts of



PUCKERING OF THE SKIN  
IN SCIRRHUS CANCER



SECTION OF BREAST SHOWING RETRACTION OF NIPPLE  
IN CANCER

From drawings in the Gordon Museum, Guy's Hospital.

the world (and in particular on mice at the Imperial Cancer Research Fund laboratories in London), have proved conclusively that a cancerous tumour contains *no virus or germ foreign to the normal living tissue*. In other words, it is now recognised as beyond dispute that cancer, at any rate, is not "catching."

In the past dozen years many tens of thousands of mice suffering from cancer have been living in closely confined quarters together in the laboratories of the Imperial Cancer Research Fund. If cancer were catching, in the same way in which small-pox or cholera is communicable, healthy animals living in close contact with others suffering from cancer would be sure to show an increased liability to the disease. After careful observation during twelve years (more than four times the average length of a mouse's existence), no increased liability to cancer has been noticed amongst the healthy mice.

**"CANCER HOUSES."** The special likelihood of contracting the disease if living in a house where there has previously been a number of cancer victims is generally looked upon as a very real danger, not only by the lay public, but by many physicians as well. Never in the world has there been a cancer

house of such gigantic proportions as the laboratories of the Imperial Cancer Research Fund. The fact that no increase in liability to cancer can be shown in the tens of thousands of healthy mice living in close proximity to mice with cancers goes far to show that the "cancer house theory" has no basis in fact. The disease is practically never "passed on" from one individual to another, hence "cancer houses" are a myth.

Everything points to the now accepted belief that cancer arises in each individual simply through some as yet not understood transformation of healthy tissue, and that one case of cancer has absolutely no relation to any other.

Next to the terrible dread of catching the disease from some dear relative, whom affection and duty demands that one shall nurse and tend intimately, is the equally horrible nightmare of the widely accepted hereditary nature of cancer. Here, again, the investigators at the Imperial Cancer Research Fund laboratory have been able to supply the world with some very comforting statistics. The duration of life in man is so long, and the average frequency of the disease so high, that enough data to clear up the much-debated question of the hereditary transmission of cancer would take centuries to obtain. The mouse, however, with its short duration of life (two years in a mouse corresponds to the age of sixty or seventy in man), and the rapidity with which one generation follows another, has allowed the Imperial Cancer Research investigators in the short space of ten years to obtain some very striking data from breeding experiments with mice of cancerous stock.

A mouse who was the offspring of a cancerous mother was first bred with another mouse, one of whose parents had also developed the disease. A healthy offspring of this mating was then bred with another mouse of cancerous parentage. The life histories of the young of these crossings was then carefully followed up, the point being to determine whether, after generations of breeding together of mice of cancerous stock, the tendency towards cancer development in succeeding litters is increased.

In these experiments each mouse has a card to himself, on which is recorded, not only his own life history, but that of his ancestors. The pedigree card shown (*see* diagram) is an example of one of the eight hundred accurately kept family trees which have been collected to date.

**DANGERS OF INHERITING THE DISEASE PRACTICALLY NIL.** The evidence obtained from these "trees" proves fairly conclusively that any inborn general predisposition to cancer is so slight that it is practically a negligible quantity. Another comforting result of this investigation is the knowledge that the mouse bred from cancerous stock is apparently not a bit more suitable for the inoculation and growth of artificially induced cancer than is a similarly aged mouse of healthy stock. In other words, weighty presumptive evidence has been obtained suggesting strongly that no matter

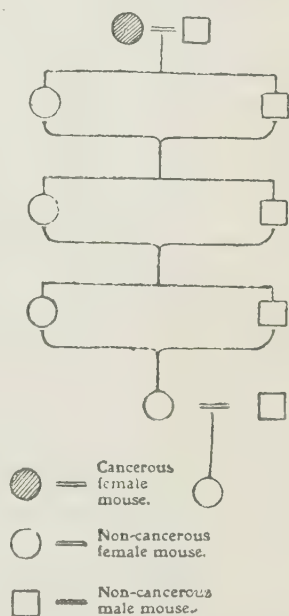
how many cases of cancer have developed in an individual's immediate family, the danger of his having inherited a general constitution liable to the disease ought not to be exaggerated. Whether or not a tissue predisposition is inherited, his likelihood of contracting cancer is apparently little or no greater than that of his neighbour who comes from a cancer-free stock.

This particular investigation affords a striking example of how work apparently utterly unconnected with cancer cures may yet be bringing us step by step gradually nearer to that ultimate goal. Inasmuch as these pedigree charts practically prove that the general, and still more the local, predisposition which leads to the disease must be acquired by the individual, entirely apart from any hereditary or congenital characteristics, it follows that the actual cause, which some day must be discovered, will more likely than not turn out to be an avoidable one.

**IS CANCER ON THE INCREASE?** At first sight the statistics of the incidence of cancer throughout the world give the impression that this terrible scourge is becoming more and more common year after year. It is perfectly true that the number of cases recorded has increased largely in later years, but this increase in the total number of cases, when analysed for different parts of the body, is found to be almost entirely due to our greater accuracy nowadays in diagnosing cancer of those parts. The greater care taken in recording and reporting cases also has much to do with the apparent increase in frequency of cancer in late years.

**CANCER, RADIUM TREATMENT OF.** The treatment of deep-seated true cancers with radium is still in an experimental stage.

No one in the early stages of cancer should, even for a moment, consider the advisability of resorting to radium treatment, instead of having the growth removed by surgical operation, nor should a surgical operation for removal be postponed even for as short a space as a few weeks, in order that radium treatment might be tried in the interval. The results obtained with radium as yet have not justified the surgeon in recommending its use in any operable case until everything which can be done in the way of a total removal of the growth by the knife has first been accomplished. Naturally, a surgeon alone can decide whether a case is surgically operable or not



**PEDIGREE OF MICE WITH  
CANCEROUS ANCESTOR**

A typical "family tree" constructed by the Cancer Research Fund, after experiments, showing four generations of cancer-free mice descended from a cancerous maternal ancestor and bred from cancerous families.

On the other hand, the results in the way of bringing about a decrease in size, or even an apparently complete disappearance of tumours which have recently been obtained under radium treatment of inoperable cancers, are such as to hold out great hopes that radium may one day become one of the most important, if not the most effective, of all the remedial means to be used against malignant growths.

So far, radium has been used in cancer treatment only on *inoperable* cases; that is, on patients in whom the disease has developed to such an extent as to make it impossible, or inadvisable, for the surgeon to hope to remove the whole mass of the growth by operation. Despite the very advanced and almost hopeless cases in which it has been used, the results have in many cases been little short of astounding to those experienced in the treatment of malignant growths.

"As regards true malignant growths (cancers) the aspect is emphatically more reassuring than last year," Sir Frederick Treves, Sergeant-Surgeon to the King, recently stated when summing up the past year's experience of radium in the treatment of cancer, at the Radium Institute, in London,

In the same way, in the cancer research wards of the Middlesex Hospital, where for the past few years radium has been used extensively on the inoperable patients received in that institution, striking advances in results obtained are also reported in the past year. For example, from June to September, 1913, sixty-eight inoperable cases were admitted to the cancer research laboratories ward. As the result of the radium treatment, thirty-two were able to leave the hospital greatly improved, having attained such a favourable state of health as to allow of their being discharged. Many of these patients, on leaving the hospital, returned to their daily work. In the corresponding period of the year 1912 all of the inoperable cases admitted died, a death-rate of 100 per cent. The greatly improved results obtained in 1913 are attributed largely to the greater amount of radium used on each patient, as well as to improvement in technique (Lazarus Barlow).

While the authorities both at the Middlesex Cancer Research Laboratories and at the Radium Institute take particular pains never to apply the word "cure" to any of the cancer cases treated with radium, cases of apparently complete disappearance of true cancerous growths are being recorded in growing numbers.

Of the two main types of cancer, the carcinomata, or true cancers, and the sarcomata, or connective tissue cancers, the latter have given the most encouraging results with radium. As an example of the effect of radium on a case of this description, the following case-history, taken from the Proceedings of the Royal Society of Medicine, may be given.

The patient, a young man of twenty-seven, on admission, had a large sarcomatous growth (cancer) blocking up the back of the nose and throat



behind the soft palate. He had lost all sense of smell, could not breathe through the nose, and was deaf in one ear through the growth obstructing the tiny air tube which connects the back of the throat to the ear. A platinum tube containing eighty-two milligrammes of radium was embedded in the tumour, and left in position for twelve hours. Five days later the growth had shrunk perceptibly, and the sense of smell and ability to breathe through the nose were regained.

Three weeks after admission, on examination with a laryngoscope no traces of growth could be found, and the patient, who had completely regained his hearing, was discharged apparently cured.

Numerous other cases, in which there has been a diminution in size of the growth, an improvement in the patient's general condition, and a marked gain in weight, are being constantly recorded. In some cases the growth apparently disappears entirely.

Even where this last happy result has not been obtained, the patient can look forward with considerable probability to a great relief of pain, a marked lessening of bleeding and discharge, and a certain amount of diminution in size of the tumour itself. Frequently this latter is sufficient to bring a hitherto inoperable growth within operable limits.\*

The great drawback in all methods of radium treatment for cancer is that one cannot say that the action of the radium is more than strictly local. If secondary growths have developed in distant organs as the result of the primary cancer—as, for example, the secondary growths in the liver, which not uncommonly develop in cancer of the rectum—it follows that, so far as our present knowledge goes, no matter how completely the original growth may have been destroyed by the radium, the patient will nevertheless fall a victim to the secondary cancers in other organs.

In radium treatment of surface cancers which do not extend deeply into the tissues underlying the skin—squamous carcinomata, or



THE CANCER HOSPITAL, FULHAM

epitheliomata—there appears to be an as yet inexplicable difference between those cancers affecting a dry surface and those affecting a moist surface. Thus a superficial cancer affecting the outer surface of the skin of the cheek is, generally speaking, very amenable to radium treatment. On the other hand, if the disease affects the inner surface of the cheek, radium treatment—or, for that matter, treatment with radiations of any sort—is almost always entirely unavailing. Considering that cases of carcinomata of the tongue are known which have been successfully treated when some eighty milligrammes of radium bromide, contained in a thin platinum tube, were inserted into the centre of the growth and left in position for twenty-four hours, the usual experience of failure when carcinomata of moist mucous-membrane covered surfaces—such as the lining of the cheek—are treated with radium very possibly depends upon too small doses of radium having been hitherto used in these cases (Lazarus-Barlow).

**RADIUM AND DEEP-SEATED CANCERS.** The extent to which benefit may be looked for from radium treatment in deep-seated growths depends largely on whether the tumour is directly accessible, as in cancer of the womb; or, on the other hand, inaccessible to a greater or less degree, as in cancer of the liver, pancreas, or deep-seated breast cancer.

Speaking in general, cancer of the neck of the womb is very amenable to radium treatment, cancer of the breast is to some degree amenable, cancer of the liver or pancreas is not amenable. The differences in result in these different varieties of cancer probably depend in part upon the different amount of rays and quality of rays the growths in these different situations receive (Lazarus-Barlow).

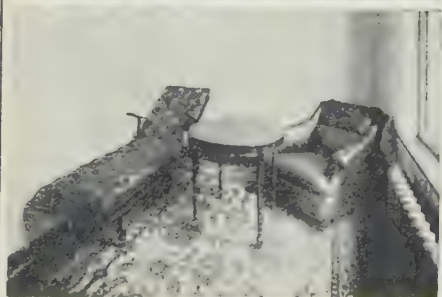
The greater success attending radium treatment when the radium can be introduced into the centre of the growth—as when a platinum tube containing the radium salt is inserted directly into the canal of a cancerous womb—has suggested the advisability of performing a small surgical operation when dealing with cancers of the breast, so that here too the radium, instead of being applied only on the body surface, can be actually inserted into the growth, so that the rays can attack it from all sides. While it is much too early to speak with confidence, the results obtained to date by this method of inserting the radium directly into the centre of the growth are much more encouraging than those attained by earlier methods.

The differences in the results obtained in treating true cancers in different parts of the body do not, however, depend entirely upon the closeness of contact between the growth and the radium.

Breast cancer, for example, does not respond so well to treatment as does a cancer of the neck of the womb of the same size, even though the same radium tube may have been introduced into the midst of the tumour in each case, and have been left in position for the same length of time. Even though the actual original growth were affected equally by the radium, the ultimate



THE CHEMICAL AND PHYSICAL LABORATORY



OPERATING ROOM (ABOVE) AND A CUBICLE (BELOW)

THE INSTITUTE PREMISES

WHERE THE MOST HOPEFUL WORK IN CANCER IS BEING DONE—THE RADIIUM INSTITUTE  
The Radium Institute, Riding House Street, W., is under the supervision of Mr. A. E. Hayward Pinch,  
Resident Medical Director and General Superintendent.



outlook as to the patient's recovery depends to a great extent on the natural history of the type of cancer which attacks the particular region in question.

Statistics at the Middlesex Hospital have shown that in 55 per cent. of cases of cancer of the neck of the womb in which post-mortem examinations were made, no spreading of the cancer in the shape of secondary growths in distant parts had taken place. On the other hand, only about 3 per cent. of post-mortem examinations on cases of breast cancer showed a similar complete absence of secondary growths in other parts. It follows, therefore, that as far as the disease is concerned one cannot expect such satisfactory results from radium treatment of breast cancer as one can where the neck of the womb is the part first attacked.

As far as present experience goes, a secondary growth in the glands in the armpit—which takes place so early in the history of practically all cancers of the breast—cannot be expected to be favourably influenced by the insertion of a tube of radium into a tumour of the breast itself, even though the latter, the primary growth, may be checked in its development by the action of the radium. It is because secondary growths which radium when inserted into the primary growth cannot reach or affect are so much rarer in the comparatively early stages of cancer of the womb that the results, so far as the entire course of the disease is concerned, are likely to be so much better here than in cancer of the breast.

**The Effect of Radium on the Tissues.** It is because different cells differ widely in their susceptibility to the action of radium rays that this mysterious element is of such use in the treatment of cancers and other abnormal growths.

It has been shown by experiment that the living cells of a sarcoma from the rat, when exposed to a certain concentration of radium rays over a period of one hour, are killed. Normal white cells of the blood exposed to three times that concentration for eight hours are not killed, though they undergo a diminution in ability to do their work. In other words, the vulnerability of the sarcoma cell must be at least twenty-four times as great as the vulnerability of the white blood cells.

While it is true that, generally speaking, abnormal cells—whether true cancer, sarcoma or rodent ulcer—suffer more when subjected to the influence of radium than do healthy normal cells of the same type, this is only true when large quantities of radium are used. Whereas exposure of a living animal tissue to a given intensity of radium influence will cause the cells which make up the tissue to degenerate, exposure of the same tissue to a lesser intensity may have the result of stimulating rather than retarding cell growth. This fact shows the great danger of people subjecting themselves to quack radium treatments, which—if they make use of any radium at all—may have the effect of hastening on the development of a cancerous growth rather than checking or slowing its rate of development.





IN THE BALANCE ROOM

A speck of radium weighing the one-millionth part of a pound can be weighed on this balance.

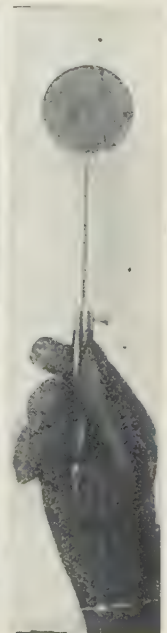


SECTION CUTTER

This machine cuts 25,000 sections to the inch.



THE PATHOLOGICAL LABORATORY



RADIUM APPLICATOR

### RADIUM TREATMENT IN SPECIAL CANCERS.

**Radium Treatment in Skin Cancer, or Epithelioma.** The results here depend largely on whether the growth has attacked the skin only, or the mucous membrane as well.

Skin cancers of the face, body or limbs, if flat and on the surface, and accompanied with little or no ulceration, give satisfactory results with exposures varying from six to twelve hours in duration, and spread over a period of three or four days. The growth quickly disappears, and little or no scarring results.

Where there is ulceration without much thickening, the same treatment spread over a period of four or five days, and repeated after an interval of six weeks if necessary, is followed by a destructive reaction of the skin; but the result is usually quite good, and there is but little disfiguring contraction of the scar.

Where there is much ulceration with great thickening of the surrounding parts, prolonged treatment with heavily screened apparatus emitting only the most penetrating rays is required. Exposures of thirty to sixty hours given during one week, and repeated in five or six weeks' time, are usually needed to check the development of skin cancers when they have reached this stage.

Epitheliomata, or skin cancers involving the mucous membrane of the tongue, lips or throat, are almost uniformly disappointing in their ultimate response to radium treatment (A. E. Hayward Pinch). Temporary improvement is not infrequently seen, and this sometimes goes as far as the disappearance of the original growth, but the treatment has practically no effect in preventing or delaying the appearance of secondary cancerous growths in the neck glands and elsewhere.

**Radium in Carcinoma or Cancer of the Womb.** In cases of inoperable cancer of the womb, radium will often bring about results which cannot be obtained by any other known method of treatment. The bleeding is stopped, the discharge is diminished in amount and rendered inoffensive in character, the ulceration is healed, the pain greatly relieved, and the rate of growth checked and sometimes completely arrested.

The burrowing of the cancerous growth and resulting hardening of the surrounding tissues are so much lessened, that in a few instances cases previously declared to be inoperable have been brought into such a state that an operation can be performed with good hopes of saving the patient's life. In these cases, exposures of from thirty to sixty hours' duration, and spread over a period of from five to ten days, are required, the series of exposures being repeated at intervals of not less than six weeks.

**Radium in Cancer of the Rectum and Intestine.** Radium treatment not infrequently proves of very great value in the treatment of cancers of these structures. Complete cures are never to be despaired of, and even if this best of all results cannot be obtained, the patient can be promised with fair confidence an arrest of the bleeding, a healing partial or complete of any ulcerated surface, a pronounced lessening of the pain and discharge, and a general slowing of the rate of progress of the disease. Here, again, radium treatment, by causing the growth to shrink in size, sometimes results in a cancer, at one time considered inoperable, allowing of an easy and complete removal. The exposure in these cases is of from six to twelve hours' duration, repeated daily, until a total treatment of thirty to sixty hours has been given. The series should be repeated after an interval of six weeks.

**Radium in Cancer of the Stomach.** There is apparently little to be hoped for from radium in the way of cure in cancer in this position. In the few cases, however, in which radium has been tried, some slight benefit, in the way of lessening of the pain, decreasing the frequency of vomiting, and improving the general health, has been noted.

**Radium in Cancer of the Breast.** The results of radium treatment in cancer of the breast are decidedly encouraging, especially in the harder variety of breast cancer, and where any secondary growths are confined to the skin lymphatics and lymphatic glands.

Radium should *never* be used as a substitute for operation in cancer, hence the only cases in which it has been given a fair trial have been very advanced, inoperable ones. In these, however, radium has proved its power to relieve pain, to promote the healing of ulcerated surfaces, and to check the growth of secondary deposits. In not a few cases it has brought about the almost complete absorption of superficial cancerous nodules and infected glands. (Hayward Pinch.)

In rapidly-growing soft cancers of the breast, little but relief from the pain can be hoped for from radium.

**Radium Treatment of Sarcomata, or Cancers Chiefly Composed of Fibrous Tissue.** These cancerous tumours which develop chiefly in the connective tissue of muscles, bones, sinews, etc., are best treated by inserting into their centre a tube containing the radium. This is left in position for twenty to thirty hours, the application being repeated after a month's interval.

Treatment by this method frequently is most effective, the tumour steadily shrinks in size, becoming replaced by a dense fibrous nodule, which shows little or no tendency to grow. In a certain number of instances all traces of the tumour have completely disappeared, an apparent cure being obtained.

**CANCNUM ORIS** or **GANGRENOUS STOMATITIS** is the name given to a rapidly progressive gangrene of the tissues of the gum and cheek, sometimes occurring in children in the course of certain infectious diseases, notably measles.

Beginning as a hard red spot in the gum or cheek, the tissues within a few hours become black and gangrenous, speedily sloughing away and leaving a circular hole in the cheek. The gangrene may extend inwards, destroying the bone of the jaw, or the deep tissues of the neck may be attacked. The parts surrounding the central gangrenous spot becomes greatly swollen, red, and "pit" on pressure. After the central gangrenous spot has perforated through the cheek, rapid ulceration may continue at the edges of the ulcer until, perhaps, the whole cheek is eaten away. Through exhaustion and absorption of products of decomposition, death ends the child's sufferings in over two-thirds of the cases. Even where recovery does take place, the destruction of a portion of the bones of the jaw or face, with loss of the teeth and the eating away of the soft tissues, may lead to terrible disfigurement.

**Cause.** The actual germ causing the rapid destruction of the tissues is not known. Although most frequently noted in children very run down and depressed at the end of a severe attack of some infectious disease, cancrum oris may develop where there is no evident pre-disposing profound anæmia or exhaustion. A curious point about the disease is that the process may be far advanced without the child giving any noticeable signs of acute pain or discomfort.

**Treatment** should be directed towards keeping up the child's strength and preventing the local inflammation from spreading to vital parts, especially the lungs. If seen in the early stage, the disease can sometimes be checked by the surgeon's boldly cutting away the gangrenous part, cauterising the raw wound with pure carbolic, and then applying some strong disinfectant. In this way the germs causing the ulceration and gangrene may possibly be destroyed at once, and the progress of the disease stayed.

A great danger always present is that the patient may breathe into his lungs the living germs from the mouth, and so set up a rapidly spreading fatal pneumonia. To lessen the risk of this, the child should be kept on its side with a pillow under the chest and the head a little downward. Any discharges running from the mouth or the wound should be caught on a large, soft pad of absorbent wool, dusted with iodoform and kept applied to the diseased cheek. Every two hours the sloughing surface should be thoroughly, but gently dabbed over with a solution of bichloride of mercury, 1 part of the mercury to a 1,000 parts of water. This strong antiseptic is a deadly poison if drunk, so care should be taken that no drops of the solution are allowed to enter the patient's throat. At two hour intervals, that is midway between each swabbing with the bichloride of mercury, the back of the throat as well as the ulcerated



parts should be well sprayed with some antiseptic solution, such as the following :

R

Sodium bicarbonate	..	..	..	..	1 drachm
Listerine	..	..	..	..	6 drachms
Water	..	..	..	..	6 ounces

Apply locally with a spray bottle.

**Diet in Cancrum Oris.** Hot milk, strong, hot, meat broths, and raw eggs should be given at frequent intervals, as it is imperative that the child's strength be kept up. Solid foods are usually impossible to swallow, and in some cases it may be necessary for the doctor to pass a long, soft rubber tube through the nostrils directly into the stomach so that a proper amount of liquid nourishment may be passed directly into the stomach. Prompt surgical treatment of the ulcer as above, together with sufficient nourishment to prevent collapse from exhaustion, will sometimes bring about a cure in even an apparently hopeless case, provided that septic pneumonia does not set in.

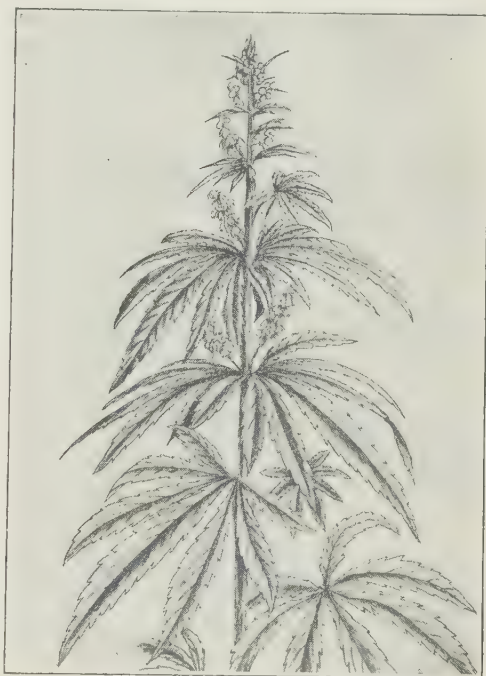
Convalescence is certain to be tedious, so a bracing tonic treatment, as suggested under anæmia, is required. The lost tissues of the cheek sometimes fill up surprising well, so that a skin grafting operation, performed some months after complete recovery, may leave only moderate disfigurement.

**CANINE TEETH**, the eye-teeth. They appear in the infant about the eighteenth month of age.

**CANITIES** is the medical name for whitening of the hair. As a rule nothing can be done to stay its progress, but when it is due to illness or weakness of the nervous system, tonics, by building up the general health, may delay the loss of the normal colouring matter. (See DYES.)

**CANNABIS INDICA, or INDIAN HEMP**, is obtained from the dried flowers of an Indian plant. The preparations used in medicine are :

The extract of cannabis indica—dose, one quarter to one grain  
The tincture of cannabis indica—dose, five to fifteen minims



CANNABIS INDICA OR INDIAN HEMP

The drug is very little used in medicine as its action is uncertain, and it is unpleasant to take on account of its taste.

Many totally unfounded rumours exist as to the wonderful sensations to be derived from the eating or smoking of the leaves from which cannabis indica is prepared. In some people, after taking large doses of the drug, there may be certain pleasurable symptoms, such as a feeling of general buoyancy, though this soon leads to drowsiness, which may or may not end in sleep. With others, however, there is no preliminary pleasurable sensation of drowsiness,

heaviness and deep sleep, with perhaps more or less headache, being the only symptoms.

**CANTHARIDES, or SPANISH FLY.** The drug is prepared from the dried and crushed bodies of a beetle which is collected in Spain, Southern Europe, and Russia.

Preparations used in medicine: Cantharides plaster, and tincture of cantharides.

Cantharides is also used in various blistering fluids.

Cantharides is rarely used internally, as it sets up acute irritation of the stomach, digestive tract and genito-urinary system.

It is this intense irritant action which makes cantharides so valuable a drug for external use, both as an irritant as when a blister is



CAPSICUM FRUIT

Hinkins

required, and as a counter-irritant where it is wished to dilate the vessels of deep-seated organs, as in an injured joint or pleurisy. (See BLISTERS.)

**CAPILLARIES.** The minute blood-vessels which unite the arteries to the veins. Through their very thin walls the blood fluid passes out into the tissues for their nourishment.

**CAPSICUM** is the dried ripe fruit of the common red pepper.

Applied on the skin, capsicum has an irritating effect, and hence is a useful ingredient of many blistering and counter-irritant preparations. Internally it is used in very small doses, because its slight irritant effect here increases the muscular activity of the stomach, and encourages a more plentiful out-pouring of the gastric juices, thus aiding digestion. Common preparations used in medicine are :—

The tincture of capsicum—dose, five to fifteen minims  
The ointment of capsicum

Capsicum ointment offers a valuable means of counter-irritation where it is wished to dilate the vessels of some deep-seated part in a reflex fashion. For example, in a chronic effusion in a joint, capsicum ointment may be applied to the skin over the joint in the hopes that the excess of blood drawn to the underlying parts may assist in the absorption of the effusion. In chronic rheumatism and in sciatica, capsicum ointment painted over the painful part and lightly bandaged often gives great relief.

As capsicum has a generally stimulating effect on the digestive functions of the stomach, and at the same time encourages the normal muscular churning action of the organ during digestion, it is often added to digestive tonics where the symptoms of dyspepsia are due to general feebleness of the stomach. (See DYSPEPSIA, ATONIC).

**CARRAWAY FRUIT** is sometimes used in medicine as carraway water, dose one to two fluid ounces, or as the oil of carraway, dose one half to three minims. The carraway fruit has an agreeable aromatic odour and pleasant taste.

The volatile oil contained in carraway fruit is of some value as a flavouring agent, and has a slight stimulant action on the stomach muscles, hence it is sometimes added to dyspepsia mixtures.

**CARBOHYDRATES** is the name given to foods of the nature of starch. They contain carbon, hydrogen, and oxygen, the latter two being present in the proportion which forms water. Neither fats nor carbohydrates contain nitrogen, being thus distinguished from proteins. Among the carbohydrates are included starch, and sugar, and gum. They form the great bulk of the solids of vegetable food.

In the body carbohydrates are partly transformed into fat, but mainly used to supply heat and energy.

**CARBOLIC ACID, or PHENOL**, one of the commonest of our disinfectants, is usually used in the strength of one part of the acid to forty parts of water. In this strength it may be used to cleanse small wounds, cuts, abrasions, etc., but it should not be applied for any length of time to large, raw surfaces, such as extensive burns, since severe carbolic poisoning from absorption may result.

**CARBOLIC ACID POISONING.** Like most disinfectants, carbolic



Hinkins

THE CARRAWAY PLANT

acid is a powerful poison, and many deaths have occurred from its being taken accidentally or with suicidal intent.

**Symptoms.** Intense burning of the throat and mouth, whitening of the lips and the mouth where the acid has corroded the mucous membrane, and the smell of carbolic usually make the diagnosis easy.

**Treatment.** Sufficient vomiting to get rid of any of the acid left in the stomach should be immediately brought about by giving the patient a strong emetic of common salt and warm water; or, if the physician is at hand he may give a hypodermic injection of apomorphine. After the stomach has been emptied, give an ounce of Epsom salts dissolved in a tumbler of water.

The patient should be put to bed in a warm room, should not be allowed to talk, and further to ease the burnt and swollen portions of the throat, the air should be kept moist by having a steam kettle boiling in the room. No food of any kind except teaspoonsful of milk and cream should be given for several days. The physician, of course, should be called in at once, as strong heart stimulants will probably be needed to counteract the general depression.

Sometimes symptoms of carbolic acid poisoning, noted chiefly by a sudden darkening of the urine, may develop when large skin surfaces are being treated with carbolic acid antiseptic dressings. Here the treatment consists of the immediate substitution of some other antiseptic for the carbolic, and the taking of half a teaspoonful of Epsom salts in half a wineglass of water four times a day.

**CARBON** forms a part of all animal and vegetable bodies. Its medicinal uses are described under the heading "Charcoal."

**CARBONATES.** *See under headings SODA, POTASH, and LITHIUM, etc.*

**CARBONIC ACID GAS**, or carbon dioxide, consists of one part carbon and two parts oxygen. It is produced by combustion of coal, wood-oil, etc., and in the body by the action of muscles, brain, and other organs.

It is heavier than air, and tends to settle at the lower part of rooms when breathed out by the occupants, or when it is produced by lamps or gas.

Sometimes carbonic acid accumulates at the bottom of wells, in disused mines, brewers' vats, holds of ships, and in hollow ground near lime-kilns.

**CARBONIC ACID POISONING** occurs sometimes when people sleep close to lime-kilns, when a charcoal or other fire is lighted in a room without a chimney, in the holds of ships, and especially in coal-mines by the familiar choke-damp.

**Treatment.** Remove the patient to the open air without delay; practice artificial respiration (*see page 139*), and if possible give oxygen to inhale.

If the patient recovers, the effects pass away completely in a short time.

**CARBONIC ACID SNOW** is one of the most successful agents for removing birthmarks and warts, and for the treatment of lupus, rodent ulcer, and other skin affections. It causes so little pain that no anæsthetic is



required. And it can be easily prepared by the medical man himself in the following way:

A small cylinder of liquefied carbonic acid gas is obtained, which can be kept until the snow is required. To make the snow, fold a dry towel in four thicknesses, and then roll it tightly round a cylindrical ruler. Withdraw the ruler, and into one end of the tube formed by the towel insert a cork. The other end is now applied to the nozzle of the carbonic acid receptacle.

Cover the palm of the hand which holds the corked end of the towel-tube with a few thicknesses of lint, and then slightly turn the tap of the carbonic acid cylinder. Very soon the towel tube will be filled with snow, the liquid carbonic acid solidifying as it escapes.

When snow begins to blow off from the nozzle close the tap. Now unroll the towel, break up the snow, and put it into a small brass tube, ramming it tightly with a wood rammer. A few blows with a mallet on the rammer (the other end of the brass tube being held against a table) will form the snow into a solid pencil. In a few seconds the pencil becomes loose in the tube by evaporation and can be pushed out. Then the pencil is wrapped round at one end with lint. It can be cut with a knife to any desired shape, and is then applied to the part to be treated.

Fairly firm pressure is necessary. When treating *nævi* (birthmarks) the pressure should be sufficient to stop the circulation. The period for which the pencil is applied varies from ten seconds to one minute. (*See BIRTH-MARKS, page 216.*)

**Apparatus Required.** A half to one-pound cylinder of liquefied carbonic acid gas, a cylindrical ruler, some short pieces of brass tubing of various diameters, a wood rammer, a towel, a cork, and some lint.

**Result of the Application.** When the pencil is removed the part to which it has been applied is white and hard. In a minute or two it softens, swells, and a wheal forms. If the snow has been applied for as long as half a minute a blister generally develops, which should be opened with a sterile needle and treated with an antiseptic dressing. Some four or five days after the application a crust forms. This should be left to fall off spontaneously.

The length of the application and the pressure to be used will depend on the nature of the affection treated. The more firmly the pencil is pressed and the longer it is kept in contact with the skin the greater will be the degree of reaction. A little experience teaches the surgeon when to use the snow and how to use it most successfully.

Capillary *nævi* may usually be removed by one application, using firm pressure. Cavernous *nævi* require very firm pressure and a longer application than the former. Warts require an application usually lasting several minutes, in some cases five minutes. They afterwards come away bodily.

**CARBONIC OXIDE POISONING.** Carbonic oxide, or carbon monoxide, is a highly poisonous gas present in ordinary coal and water gases. It is also formed when any substance is burned in a quantity of air insufficient for complete combustion. Coke and charcoal stoves sometimes give it out in dangerous quantities. A slight escape of gas in the house may gradually produce serious symptoms of carbonic oxide poisoning.

The symptoms are great weakness, a throbbing headache, nausea, and giddiness. Later there may be convulsions and then unconsciousness.

**Treatment.** Send at once for the doctor. Until he arrives practise artificial respiration (*page* 139). This may have to be continued for hours. The medical remedies are oxygen inhalation, hypodermic injections of strychnine (one-thirtieth to one-fifteenth of a grain), and in very serious cases transfusion of blood.

**CARBUNCLE** is a local gangrene of the tissues underlying the skin.

The chief differences between a boil and a carbuncle are that the latter may be an inch or more in diameter, is inclined to spread, and in the later stages may have three or four openings in its surface leading down to the core, whereas a boil is much smaller, does not spread, and the skin is broken in but one place.

A carbuncle is most likely to occur in one who is in a debilitated and generally run-down state of health, perhaps the result of living in insanitary surroundings or of insufficient food. Sufferers from diabetes and chronic Bright's disease not infrequently develop carbuncles.

A typical carbuncle begins as a hardish, painful swelling under the skin, which is red or purplish in colour. Soon the hard, swollen area, which may be an inch across, becomes softer and doughy, and then later the purplish red skin gives away, and the core of the carbuncle may be seen beneath as a greyish white slough. Usually the pain is intense, and there may be some fever.

**Treatment.** Unlike a boil, a carbuncle always demands immediate treatment at the hands of a surgeon. A free incision must be made deep into the boggy mass underlying the skin, and all the dead and dying tissues must be removed, after which the cavity should be cleansed with pure carbolic acid and packed with antiseptic gauze. From now on the carbuncle must be treated as any other abscess, the packing being removed once daily, smaller amounts of gauze being inserted as the cavity gradually lessens in size.

The patient's strength must be kept up by a generous nourishing diet, and as the carbuncle always has the effect of pulling the patient down, some such tonic as the following should be taken for a few weeks :

R

Iron and ammonium citrate	..	..	..	2 drachms
Tincture of nux vomica	..	..	..	1 drachm
Spirit of chloroform	..	..	..	1 "
Water	..	..	..	enough to make 6 ounces

Make into a mixture. Take one tablespoonful three times a day, after meals.

A carbuncle occurring in a diabetic patient should be taken as a sign that more rigorous exclusion of starchy and sugary foods from the patient's diet is required.

Carbuncle is also the name sometimes given to the malignant pustule of anthrax. (*See* ANTHRAX.)

**CARCINOMA.** Another name for true cancer as differentiated from sarcoma. (*See* CANCER.)

**CARDAMOMS,** or cardamom seeds, contain a volatile oil which is often used in medicine for its carminative and stomachic effect. On account of its reddish colour and pleasant taste the tincture of cardamoms is a popular flavouring and colouring agent.

The dose of the compound tincture of cardamoms, the form most commonly used in medicine as a carminative, is one half to one teaspoonful.

**CARDIAC DISEASES.** This is another name for heart diseases, which are dealt with in a later article. (*See* HEART, DISEASES OF.)

**CARDIOGRAPH.** An instrument which records the beats of the heart on a photographic plate, by means of the minute electric currents produced by the muscle movements of the heart. The patient's arms and one leg are placed in baths (electrodes) containing salt solution, and connected electrically with the recording instrument, a special form of galvanometer. In the galvanometer an extremely fine fibre moves with great accuracy in response to the minute currents from the heart. These movements are photographed through a microscope.

For hospital use a number of beds are connected with the instrument and special forms of electrodes used, so that the physician in attendance can have at any time, and continuously, reliable information regarding the action of the hearts of the patients without disturbing them. (*See illustrations on page 363.*)

**CARDITIS,** more commonly called Myocarditis, is an inflammation of the muscle substance of the heart, which may be either acute or chronic. (*See* MYOCARDITIS.)

**CARIES.** Abscess formation or ulceration of bony tissues. Decay of the teeth, with ulceration and formation of matter, is also called caries. (*See* BONE DISEASES *and* TEETH.)

**CARIES OF SPINE.** *See* CURVATURE OF SPINE.

**CARMINATIVES.** Peppermint, cloves, allspice, cinnamon, etc., used to relieve flatulency and intestinal colic, are examples of the remedies termed carminatives. (*See* INDIGESTION.)

By stimulating the stomach and the intestines into more forceful movements they aid in the expulsion of gas which has accumulated in the digestive tract.

Many substances act as carminatives, such as volatile oils, strong alkalies, bitters of all kinds, and stomachics in general.

**CARRON OIL** is made up of equal parts of linseed oil and limewater. Formerly it was much used as a covering for burns and scalds. It should be

applied as soon as possible after the injury takes place, a little oiled silk being lightly placed over it to protect the clothes and bedclothes.

This old remedy is dropping into disuse among surgeons, owing to the fact that it is found to favour the growth of germs in the wound. Watery antiseptic applications are now preferred. (*See BURNS AND SCALDS.*)

**CARTILAGE.** A smooth, glistening, semi-elastic tissue found in the framework of the ears, the tip of the nose, the junctions of the ribs, and the breastbone, etc., and covering the rounded ends of the long bones in the joints. (*See BONES.*)

**CASCARA SAGRADA** is a drug obtained from the dried bark of a Californian tree. It is much used in medicine on account of its gentle laxative and aperient action. With little tendency to cause griping, cascara sagrada is a favourite laxative medicine in cases of chronic constipation where drugs must be taken day after day. The commonest preparations are the dried extract, dose two to eight grains; and the liquid extract, dose a half to one teaspoonful.

As cascara also has a bitter principle which makes it more or less of a carminative, it is a valuable drug in those cases where the constipation is accompanied by much flatulence, or wind.

In a not too severe case of habitual constipation a single dose of five or six grains of the dried extract, or a teaspoonful of the liquid extract may be taken at bedtime, or smaller doses, ten to twenty drops of the liquid, or a grain of the dried extract, may be taken before each meal, three times a day.

After the bowels have been trained into moving regularly under the action of the cascara the amount taken each day should be gradually diminished until finally it can be left off entirely.

To cover the exceedingly bitter taste of the liquid extract it may be mixed with a little tincture of orange or chloroform water.

The fact that cascara can be used week after week without any increase in dose being required makes it an invaluable laxative for those naturally inclined to slight chronic constipation.

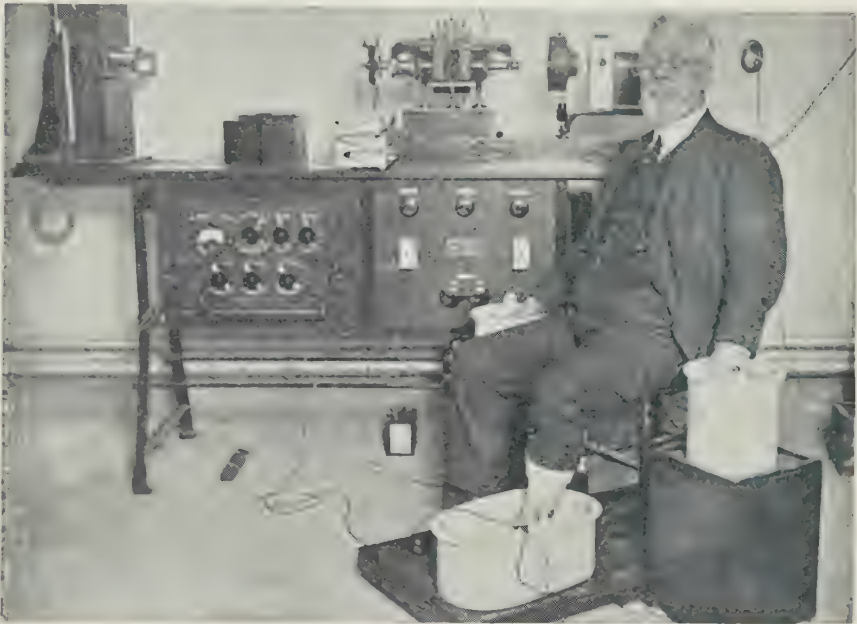
**CASCARILLA** is obtained from the bark of a tropical tree. It has an agreeable aromatic odour, and a bitter taste.

The common preparations used in medicine are the infusion of cascarilla, one half to one fluid ounce; and the tincture of cascarilla, one half to one fluid drachm.

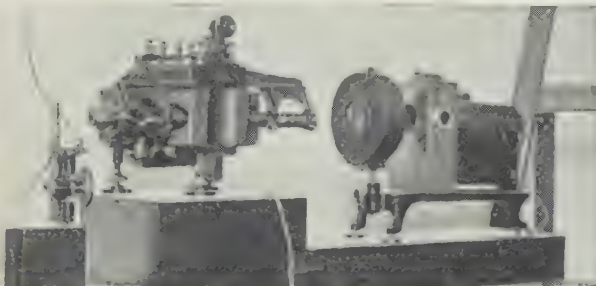
Cascarilla is a vegetable bitter, and because of its stimulating effect on the stomach and its glands is often added to digestive mixtures.

**CASEATION** is a change which takes place chiefly in lungs affected with tuberculosis (consumption), by which the healthy tissue is converted into material of a firm, cheesy consistence.





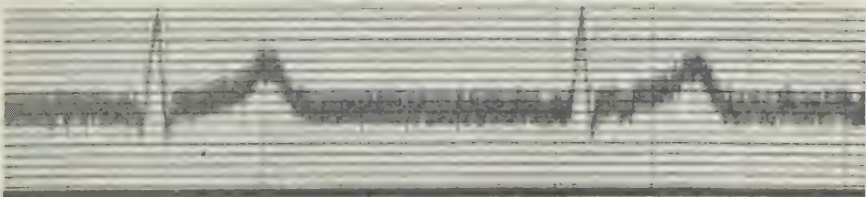
THE CARDIOGRAPH RECORDING A PATIENT'S HEART BEATS



THE GALVANOMETER WHICH RECEIVES ELECTRICAL IMPULSES FROM THE HEART



RECORDING CAMERA



AN ELECTRO-CARDIOGRAM, SHOWING THE BEATING OF A NORMAL HEART RECORDED BY MINUTE ELECTRIC CURRENTS FROM THE PATIENT'S OWN HEART

**CASEIN.** The heavy, thick curd of cow's milk is composed chiefly of casein. Limewater is often added to the baby's bottle to reduce the density and toughness of this casein clot. As human milk contains a much smaller percentage of casein than does cow's milk its clot is much lighter and more flocculent, and therefore more digestible.

**CASTOR OIL** is perhaps the ideal purgative for infants and children. It is obtained from the seeds of the castor oil plant, a native of India, but now grown in many other countries.

Castor oil in doses from a half to two tablespoonsful is often taken by adults where a mild purgative to clear out the whole intestinal tract is needed. Varying from fifteen drops for a three months' infant to a teaspoonful or more for a two or three year old child, castor oil is a remedy which can usually be prescribed with benefit at the onset of most infantile disorders. In addition to the plain oil there is an official mixture in the Pharmacopœia containing orange flower water, mucilage of acacia, and cinnamon water. The dose of this mixture is one to four tablespoonsful.

Where, in a grown person, there is diarrhœa, caused by the irritation of undigested food in the intestines, one to two tablespoonsful of castor oil, to which has been added ten to fifteen drops of tincture of opium, is sometimes a very effective cure. In fevers, in pregnancy, and in patients suffering from piles castor oil is an excellent purgative, because it combines thoroughness with mildness. To disguise the taste it may be taken floating on a layer of peppermint water, and covered with a thin layer of brandy.

Castor oil has no laxative effect until it has passed through the stomach into the intestine. Accordingly, the bowels may not move until four or five hours after the oil has been given.

**CASTS** are moulds of tubular organs, principally the urinary tubes



CASCARILLA

Hinkins

in the kidneys, which are shed in certain diseases. They consist generally of epithelial cells, blood cells, degenerated tissue cells, etc.

The presence of casts in the urine (which can be seen with a microscope) indicates disease of the kidneys, and is one of the chief signs of Bright's disease. (See page 296 and plate facing page 301).

Casts of the bowel may be expelled in a form of inflammation of that organ (membranous colitis). Membranous casts of the air passages sometimes come away in diphtheria.

**CATALEPSY** is a rare state of trance in which the patient's body and limbs become stiff, and remain in any position in which they are placed. The power of voluntary movement and sensation is lost, and usually the patient becomes unconscious. The victims are mostly hysterical young women, but sometimes catalepsy is associated with epilepsy, neurasthenia, or some affection of the mind. Causes which may bring on an attack are sudden fright, shock, or any deep mental emotion or prolonged depression.

**Symptoms.** Generally the attack is sudden, the patient fainting away, and becoming pale and death-like. She generally stays in whatever position she may be placed, with wide-open eyes. The temperature falls, the heart beats slowly, and the breathing becomes shallow. In slight cases the patient may retain some degree of consciousness and sensation.

The attack may end in a few minutes, or last for several hours. In rare cases it continues for days, and even weeks. Sometimes, however, these prolonged cases are fraudulent, being carried out to get money from a sympathetic or curious public. To a layman, the patient often has all the appearance of being dead. But the tales of people being buried while in a state of trance are not to be trusted.

If once attacked with catalepsy a girl is likely to suffer again, but as she grows older the liability diminishes.

**Treatment.** A cataleptic patient requires the care of a skilled and sensible physician. Sometimes an attack can be cut short by dashing cold water in the face, or giving a pinch of snuff, or a sniff of ammonia. Vomiting produced by a subcutaneous injection of apomorphine (1-20th to 1-10th of a grain) may prove a successful remedy.

When the attack passes tonics should be given. Valerian is a valuable drug in this disease. Exercise, outdoor occupation, and, in some cases, stimulant cold baths improve the patient's health. Removal from home is desirable when the patient is very hysterical.



THE CASTOR OIL PLANT



**CATAPLASM.** Another name for a poultice.

**CATARACT,** a whitish opacity of the lens of the eye causing more or less blindness. Sometimes a cataract may develop from no apparent cause with the approach of old age (senile cataract). The infirmity may also suddenly develop in the course of rheumatism or diabetes, or may be due to accidental injury to the lens. Sometimes the eye is clouded by cataract from birth.

**Symptoms.** As a general rule the first symptom the patient notes is a group of tiny stationary specks before the eye. These must not be confused with the harmless floating specks sometimes noted by people with normal eyes. The general vision gradually grows dimmer and the sufferer may note that he sees best when the light is not particularly bright. This is due to the fact that cataract usually starts in the centre of the lens and in a subdued light the pupil of the eye becomes larger, thus allowing more rays of light to pass into the back of the eye through the as yet unaffected portions of the lens.

**Treatment.** When once the lens has become whitened and opaque the only rational treatment consists of removing it entirely, and making up for its absence by wearing an artificial glass lens in front of the eye. In this way excellent vision can nearly always be obtained.

Often after the diagnosis of cataract is made the patient has to wait months before the operation is performed to allow the cataract to develop fully or harden. If not sufficiently hard there may be difficulty in removing it whole.

The older the person the slower the cataract develops as a general rule. When cataract occurs in children and young adults it usually is of the soft variety, which sometimes can be treated by puncturing the capsule of the lens with the needle, and tearing up the lens itself, so that finally all the lens tissue becomes absorbed. After the age of thirty to forty, however, the operation of removal of the entire lens is the only reliable treatment.

Since when a cataract develops in one eye it is very commonly followed by a similar cataract in the other, after an interval of some months or years, it is best to postpone operation on the first eye until the sight of the secondarily affected eye has become pronouncedly dimmed. By taking this course the lens of the primarily affected eye is given time to "ripen" or harden,



THE CATALEPTIC STATE  
From a case at the London Hospital.



thus rendering the operation more likely to be completely successful. Also, when fitted with correct glasses, the patient will have sufficient sight in the eye already operated upon to carry him on until the lens of the secondarily affected eye has had sufficient time in its turn to ripen completely.

**CATARRH** denotes an irritation and inflammation of any mucous membrane in the body. The term is most commonly used, however, to describe an ordinary cold in the head. (See under that heading.)

**CATECHU**, an extract from the leaves of an Eastern plant which contains tannin, and therefore has a valuable astringent action. It is most commonly prescribed in sore throat lozenges and diarrhoea mixtures.

The dose is five to fifteen grains of the powder. Other preparations are :

The compound powder	
of catechu . . . . .	10 to 40 grains
The tincture of catechu $\frac{1}{2}$	to 1 drachm
Lozenge of catechu	
each containing	1 grain

**CATGUT** is used by surgeons for tying divided arteries and sometimes for stitching wounds. As catgut is an animal substance, after a time it usually becomes absorbed, and so when catgut is used for sewing up a wound the painful process of removing stitches is rendered unnecessary.

**CATHARTICS** are purgatives which have a pronounced and severe action as differentiated from the mild laxatives.

They act by greatly increasing the normal rhythmical movements of the intestine, and by causing the glands in the bowel wall to pour out an excess of mucus into the interior of the bowel.

Because of the irritation of the intestine which may result, cathartics often cause intense abdominal pains and severe diarrhoea which may be tinged with blood. Cathartics are apt also to cause griping if used alone, so the drug hyoscyamus is usually prescribed with them to prevent irregular and painful contractions of the muscle fibres in the intestinal walls.

Cathartics should never be self-prescribed or used indiscriminately, as besides the intense pain they may even cause dangerous collapse. They are chiefly used by physicians as a last resort where milder purgatives have failed, and where it is desirable to remove as much fluid as possible from the body by way of the intestine.



THE CATECHU PLANT

Hinkins

Cathartics in common use are aloes, calomel, jalap, and podophyllum. Even more violent in their action (and therefore only rarely used in medicine) are croton oil, elaterium, turpentine, and gamboge.

**CATHETER.** A hollow instrument used to draw off fluid, usually from the urinary bladder. Of various sizes catheters may be rigid, made of metal, or semi-rigid, of a varnished woven network, or soft, made of soft rubber.

No one except an experienced surgeon should ever attempt to pass a hard catheter, as serious injury may arise from the point of the catheter being pushed through the walls of the urethra (the passage leading into the bladder) into the surrounding soft tissues. Frequently on account of old strictures or enlargement of the prostate gland old men have constantly to use catheters. Such patients cannot be warned too strongly of the *constant need of the strictest antiseptic precautions* to prevent disease germs being carried into the bladder on the catheter, and there setting up acute inflammation. (*See* BLADDER, DISEASES OF.)

Unless the patient has been regularly instructed in passing a hard catheter the soft indiarubber type should always be used. This should be carefully washed in very hot water, not boiling, immediately after use, wiped thoroughly clean, and then soaked in a solution of mercuric chloride (one part of the chloride to 2,000 parts water), and left there until it is used again. (Note that this solution is a *deadly poison* if drunk.)

When the catheter is again to be passed the patient should thoroughly cleanse his hands with plenty of soap and hot water, and then taking the catheter from the antiseptic solution he should carefully pour out any contained solution remaining in the catheter, and then dip it into a jar of carbolised oil. Only when these precautions are fully carried out can the practice of catheterisation be continued day after day without setting up dangerous bladder troubles.

If the semi-rigid type of catheter must be used, this should be soaked for an hour before use in a 1 to 2,000 solution of perchloride of mercury, and then lubricated with the carbolised oil. After use it should be well washed in cold water, then soaked for ten minutes in the perchloride of mercury solution, and finally carefully dried with a clean towel, and put away in a clean box until an hour before it is next required. This semi-rigid type must never be boiled.

The metal catheter must never be allowed to soak in the perchloride solution, but should be boiled for ten minutes before the physician is to pass it.

**CAUDA EQUINA** is the lower end or "tail" of the spinal cord. It contains no actual nerve fibres, and has no nervous functions.

**CAUL.** The "caul" which occasionally covers a child's head at birth is a portion of the amnion or membrane which lines the womb during pregnancy.

**CAUSTICS** are substances which burn. Fuming nitric acid, arsenic, nitrate of silver, the electrically heated needle, and Pacquelin's cautery, a hollow metal point heated red-hot by benzine blown into it are the chief caustics and cauteries used in medicine.

They should never be used by anyone but an experienced surgeon, in whose hands, as a means of destroying warts or chronically inflamed or overgrown tissues in the back of the throat or nose, etc., good results are often obtained.

**CAVERNOUS BREATHING** is a peculiar hollow breathing sound heard through a stethoscope applied to the chest when a cavity has formed in a tuberculous lung.

**CAVITY.** An excavation in a lung, produced in the course of tuberculosis by ulceration and death of tissue, is known as a cavity. A cavity may be very small or as large as a horse-chestnut.

Where a cavity of any size has developed there is usually a profuse expectoration of muco-purulent matter. Sometimes a blood-vessel in the wall of a tuberculous cavity gives way, and blood flows out into the cavity. If the bleeding is slight the only symptom may be specks of blood in the expectoration. If



THE BASIS OF ANIMAL LIFE: A TYPICAL CELL AND THE METHOD OF CELL REPRODUCTION

On the left is a diagram of a typical cell made up of cell wall (1), protoplasm (2), nucleus (3) and nucleolus (4). In the centre a cell, by division and re-division, is building up animal tissue. On the right is a micro-photograph of an amoeba, one of the simplest forms of life, consisting of cells without organic structure.

the vessel is of any size large amounts of blood may be coughed up, and the patient may faint or even die from the sudden loss of blood.

**CELLS** are the minute particles of which the body is built up. They range in size from 1-10,000 to 1-1,000 of an inch in diameter. All living things commence existence as one cell which divides into two, the two into four, and so on until the whole structure is formed.

In the course of development of a human being the cells undergo changes by which muscle, nerve, skin, blood, and all the other different tissues are formed. Cells are continuously being formed throughout the body, growing old, dying and being shed. It is the cells of various types which carry out all the vital processes which make up life.

**CELLULAR TISSUES** are the loose fibrous structures lying between the skin and the muscles.

**CELLULITIS** is the medical term used to describe a rapidly dangerous variety of inflammation of the soft tissues underlying the skin or lying between the muscles. The cause is always some pus-forming germ which either enters the tissues through a wound or is brought there in the blood stream.

The first symptom is a rapid swelling of the whole part, with redness, tenderness, pain, and some fever. On pressing the finger against the skin, a small pit or depression is formed which may remain for some moments after the pressure is removed. In the next stage, the whole of the skin over the part involved becomes dark red, tense and firm from the swelling of the tissues underneath.

The inflammation in cellulitis rapidly spreads so that when beginning above the wrist, for example, within a day or two the whole arm may be hard, brawny, and greatly increased in size. Unless vigorous treatment is instituted the tissues under the skin become gangrenous and the skin itself becomes purple or blackish, and then gives way. By this time the patient is usually in a very low state, with high fever, rapid, irregular pulse, and all the signs of severe constitutional disturbance.

**Treatment.** Immediately any suspicion of cellulitis is aroused, large hot fomentations made by wringing out cloths in a solution of boracic acid (a teaspoonful to the pint of water) should be applied, and renewed as soon as they begin to grow cold. The patient should be put to bed at once. To ensure a free flushing out of the bowels two or three grains of calomel should be given, followed next morning by some purgative draught such as the following :

R

Magnesium sulphate	..	..	..	..	..	1 drachm
Tincture of ginger	..	..	..	..	..	30 minims
Infusion of senna	..	..	enough to make			1 ounce

Make into a mixture. Take whole of above as one dose.

A surgeon should be in close attendance on the case as, should the inflammation not subside, free incisions will have to be made through the skin into the underlying inflamed tissues, and drainage tubes inserted to allow easy escape of any matter forming. This accomplished, the whole of the affected limb (should an arm or leg be attacked) may be soaked for fifteen minutes two or three times a day in a bath of a warm solution of perchloride of mercury and water, fifteen grains of the perchloride of mercury to each quart of hot water. (Note that this solution is a deadly poison if taken internally and care must be exercised in its use.)

Beyond keeping the bowels free no internal medicines are required as a rule, unless pronounced general weakness sets in, when some heart stimulant, such as a teaspoonful of sal volatile in a wineglassful of water, may be given, or, if the physician sees fit, stronger stimulants, such as hypodermic injections of strychnia, may be administered.

As the sufferer is always severely pulled down by an attack of cellulitis, some bitter tonic such as the following may be taken for a fortnight or so during convalescence :



℞

Iron and quinine citrate	..	..	..	80 grains
Solution of strychnine hydrochloride	..	..	..	48 minims
Spirit of chloroform	..	..	..	2½ drachms
Infusion of calumba	..	..	enough to make	8 ounces

Make into a mixture. Take one tablespoonful three times a day after meals.

Cellulitis is one of the many ailments which, if treated vigorously in the early stages, rarely need have any serious results. On the other hand, if the consulting of a surgeon is delayed, or if operative treatment is refused in hopes that the inflammation can be made to subside by the use of poultices and other home remedies, serious and permanent injury, if not actual loss of life, may result.

**CEREBELLUM** is the smaller portion of the brain situated behind and beneath the cerebrum or main brain. (See BRAIN.)

### CEREBRO-SPINAL MENINGITIS

is an infectious disease caused by a germ called the *diplococcus introcellularis* (see page 165), setting up an inflammation of the covering membranes of the brain and spinal-cord.

The disease may occur in epidemics or in widely scattered cases. "Spotted fever" and cerebro-spinal fever are other names given to the disease.

Epidemics most frequently occur in the cold months of winter and spring, but the disease may break out at any time. While the disease is commonest in children, serious epidemics have occurred where young adults are living in close contact, as soldiers in barracks and camps. Lack of cleanliness, overcrowding, damp, dirty houses, etc., apparently encourage the spread of epidemics.

Nothing is known of the manner in which the contagion is conveyed from one person to another. The probability is that the germs collect in the dust in the dark corners of living rooms, and then gain access to the mouth on the fingers or food, etc. The baby's comforter, dropped on the floor and then put back in the mouth with the dust-bearing germs clinging to it, has often been accused of setting up the disease.

The germs under suitable conditions seem to have remarkably long lives. Outbreaks occur year after year in the crowded poorer districts of our great cities, although throughout the summer there may be no cases reported.

**Symptoms.** Although there may be slight premonitory symptoms, such as loss of appetite and general malaise for a few hours previously, the attack usually comes on suddenly with vomiting, chills, and severe headache.



CELLULITIS OF HAND

From a drawing in St. Bartholomew's Hospital Museum

Stiffness and pain in the muscles at the back of the neck are sometimes the first symptoms complained of. Within an hour or two the temperature may shoot up two or three degrees. The patient complains of increasing headaches, and keeps his eyes closed, since all light hurts them. Any sudden noise, such as the slamming of a door, he resents with a nervous start as if sounds, too, were painful. As the disease progresses, restlessness and irritability increase, severe pains are complained of in the back and legs, and the stiffness of the muscles of the back and leg increases. Later the muscles all over the body become rigid, the head being thrown back, and the back curved until the patient is almost bow-shaped. In young children there may be convulsions or muscular tremors. A pronounced squint is not uncommonly noticed. Delirium may come on early, and sometimes (though by no means always) small, reddish purple spots (from which the disease derives the name "spotted fever") may develop on the skin.

In some cases the throwing back of the head and the arching of the back may not occur. There may, however, be great sensitiveness of the skin, with perhaps slight stiffness of the muscles at the back of the neck and down the spinal column. In some cases vomiting may be a persistent and prominent symptom. In others it may pass off within a few hours of onset.

**Course of the Disease.** In an ordinary severe attack, showing the symptoms as above, death may occur towards the end of the first week, or, after a week or more, improvement may gradually set in, the fever falling, and the restlessness, muscular spasms, and rigidity slowly passing off.

In the malignant type of the disease the symptoms may crowd upon one another with intense severity, the patient rapidly losing consciousness, and dying within twenty-four to forty-eight hours. In a certain small proportion of cases, the symptoms develop with normal severity only to pass off suddenly within two or three days, complete recovery ensuing.

Generally speaking the younger the patient the less the chance of recovery. Few infants under eighteen months recover. Epidemics attacking both children and adults vary in mortality rate from 10 to 60 per cent. In grown people the death-rate is much lower than in children. Where the fever keeps high, and there are profound brain symptoms shown by frequent convulsions, delirium and prolonged unconsciousness, the outlook is very bad. No case however should be looked upon as hopeless, for sometimes even the most prolonged and severe attacks, lasting for many weeks or months, end in complete recovery.

**Diagnosis.** The tremor of the muscles, the arching of the back, and retraction of the neck developing in a sudden acute illness ushered in with high fever, chills, vomiting, headache, and tenderness of the back and neck muscles make the diagnosis easy in the great majority of cases. There is one special sign which is practically always present, and is

sometimes of great value in making the diagnosis. When a person is lying flat on his back, and the thigh is bent at the hip-joint so as to be pointing perpendicularly upward, the lower leg can be brought into a straight line with the thigh by bending it at the knee. In meningitis although the patient's thigh can be brought into this position, pointing upwards and at right angles to the line of the backbone, it will be found impossible to straighten the lower leg on the thigh when held in this position. This inability is due to powerful and uncontrollable contraction of the muscles on the back of the leg which bend the lower leg on the thigh. (Kernig's sign.)

**Treatment.** Very hopeful results have been obtained in the past few years with an anti-meningitis serum. As yet, however, hardly enough cases have been reported in which the serum has been used to prove its worth fully. In the face of the very high rate of mortality under older methods of treatment, the serum, nevertheless, should always be tried, if obtainable.

The treatment (which, of course, can only be carried out by a physician) consists of inserting the point of a hollow needle into the spinal canal between the vertebra, and drawing off a quantity of the cerebro spinal fluid, and then injecting through the same needle a measured quantity of the anti-meningitis serum. The treatment may have to be repeated daily for some days. In addition to the serum treatment (or in place of it, if it be not obtainable), ice should be applied to the back of the neck and the spine continuously. Small ice caps filled with cracked ice may be used here. To reduce the fever, baths at blood-heat temperature, or even much cooler, may be given. The irritability and delirium, as well as the temperature, are sometimes greatly relieved by this means.

Internally, the physician may be forced to prescribe opium in large doses, or morphia, on account of their quietening, pain-relieving effect. As far as actually curing the disease is concerned, no known drugs are of the slightest value.

In prolonged cases, keeping up the patient's nourishment is often one of the greatest difficulties of the physician and nurse. A soft rubber catheter passed along the floor of the nose and into the stomach may be used for the direct introduction into the stomach of milk, meat broths, etc., during delirium or unconsciousness.

Even after the symptoms have begun to abate, convalescence is prolonged and full of danger. Pneumonia may set in, or pleurisy or inflammation of the sac covering the heart (pericarditis).

Headache and symptoms of mental weakness may persist for many weeks after an otherwise complete recovery. Permanent deafness resulting from extension of the inflammation to the middle or internal ear (see EAR) may develop. For months after complete recovery the patient should avoid all mental strain, such as insistent school-work or business, and should lead a

calm, non-strenuous, outdoor life as much as possible. If the course of the disease or convalescence is prolonged, the possibility of bed-sores developing should never be forgotten. (See BEDSORES.)

Usually after an attack some bracing tonic such as the following, is required, to build up the patient's general strength:

R.	Quinine sulphate	..	..	..	..	8	grains
	Solution of ferric chloride	..	..	..	..	$\frac{1}{3}$	drachm
	Glycerin	..	..	..	..	$1\frac{1}{2}$	"
	Water	..	..	..	..	2	ounces
	enough to make						
Make into a mixture. Dose for a child of 4 to 8 years, one teaspoonful three times a day after food.							

**CEREBRUM**, the main brain. (See BRAIN.)

**CHAFING.** Wherever there is pressure on the skin, or where two skin surfaces rub against one another, chafing may occur. The commonest situations are the buttocks, the arm-pits, beneath the breasts, and about the feet.

**Treatment.** Wash the part several times a day with warm, soft water and soap, dry carefully by dabbing the part with a soft towel (not rubbing it), and then dust the skin with powdered talc, a mixture of 1 part starch, 2 parts powdered zinc oxide, and 2 parts orris root. For tender feet apt to chafe, the same powder may be dusted into the socks, which should be changed daily.

The following is a useful and inexpensive dusting powder:

R							
	Powdered starch	..	..	..	..	1	part
	Powdered zinc oxide	..	..	..	..	2	parts
	Powdered orris root	..	..	..	..	2	"

Where excessive perspiration is the cause of the chafing, the following scented powder will be found very agreeable:

R							
	Oil of rose geranium	..	..	..	..	5	drops
	Salicylic acid	..	..	..	..	1	drachm
	Powdered zinc oleate	..	..	..	..	$2\frac{1}{2}$	ounces
	Powdered starch	..	..	..	..	4	"

Mix well into a powder and dust on lightly when required.

**CHALK** is carbonate of lime, or, more properly, carbonate of calcium. lime being the oxide of calcium.

Prepared chalk is made by grinding masses of chalk, stirring up in water, allowing to settle, and then grinding the powder. Externally it forms a good dusting powder. It is also used in tooth powders and internally for correcting acidity of the stomach. Chalk, however, should not be given too often in this way, as it tends to lodge in the intestine.

Chalk mixture is composed of prepared chalk one part, gum arabic one part, syrup two parts, and cinnamon water thirty parts. Dose: One to two teaspoonsful for a young child; one to two tablespoonsful for an adult. This is a good astringent in diarrhœa.



Aromatic chalk-powder used in acid dyspepsia and in diarrhœa is composed of prepared chalk twenty-two parts, cinnamon eight parts, cardamoms two parts, cloves three parts, nutmeg six parts, saffron six parts, and sugar fifty parts. Dose : Ten to sixty grains.

**CHALKSTONES (TOPHI)** are the deposits of urate of soda which take place in the joints, the ear, the sclerotic coat of the eye, and along the tendons, etc., of gouty people.

**CHALYBEATE WATERS** are mineral waters containing iron.

**CHAMPAGNE** in its natural state should contain about ten per cent. of alcohol. As consumed in England it is usually stronger, being made so by the addition of brandy. The content of sugar ranges from a mere trifle to twelve or fourteen per cent., English people preferring the "dry" sugarless wine; Russians and other Continental people usually liking it sweet.

In fevers, when the stomach is in an irritable condition, or vomiting occurs, champagne is sometimes a useful remedy. It is very rapid in its effects as a stimulant, and is therefore useful in collapse.

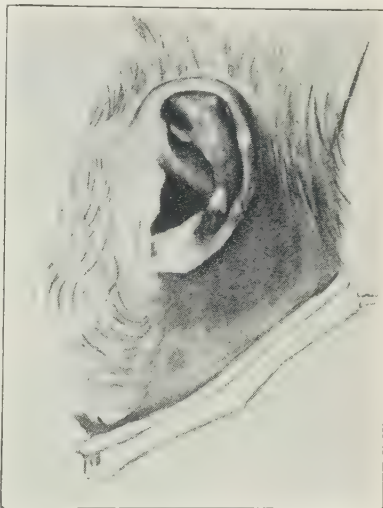
**CHAMOMILE** is, with reason, a popular domestic medicine. An infusion of the flowers, known as chamomile tea, is one of the best of the bitters, and an excellent stimulant of the digestion. It is made by infusing an ounce of the dried flowers in a

pint of boiling water for fifteen minutes, and then straining. Dose : From two tablespoonsful to a small wineglassful. A pleasanter infusion may be made by using cold water, and allowing the flowers to remain in it for twenty-four hours. Chamomile tea is considered by many to be soothing to children cutting their teeth, and so to promote sleep.

Five to ten drops of the oil of chamomile on a piece of sugar often relieves flatulent pain in the stomach.

**CHANCER.** The hard chancre, or primary sore of syphilis, and the soft chancre, or chancroid, are described. (For Hard Chancre *see* SYPHILIS.) The soft chancre is a non-syphilitic infectious sore which is always contracted, directly or indirectly, from a person suffering from a similar sore.

Within one to three days after infection a small dirty-yellow ulcer appears. Spreading rapidly, a ring of sores may appear in the following forty-eight hours. The softness of the sore, the presence in most cases of more than one,



CHALKSTONES ON EAR  
From a drawing at Guy's Hospital.

and the early appearance after infection, are the chief points which differentiate the non-syphilitic soft sore, or chancroid, from the hard sore, or chancre, of syphilis.

The patient, if possible, should be confined to bed, for the muscular movements of walking about greatly increase the likelihood of the glands in the groin becoming affected (Bubo). The sore and the adjacent skin and mucous membrane should be bathed with a warm solution of boracic acid (a teaspoonful to the pint of water) half a dozen times a day. The part should be carefully dried; and then a dusting powder, made by mixing equal parts of acetanilid, iodoform and zinc oxide, should be lightly dusted over the whole affected area. If the glands in the groin become painful and swell, hot fomentations may be applied continually until the forming abscesses come to a head. (*See Treatment of Bubo, under GONORRHOEA.*)

**CHANGE OF LIFE.** (Also called the Climacteric and the Menopause.) The period at which menstruation naturally comes to an end in women, and they cease to bear children, is one of very great importance. The change frequently affects both mind and body. Especial care of the health is therefore called for.

Most women, of course, suffer no permanent evil consequences. They may for a time feel weaker than formerly, become somewhat melancholy, and a certain mental and physical sluggishness may come over them, but these are usually only temporary conditions. As soon as the change is completed the health becomes as good or better than ever. But in a certain proportion of cases serious symptoms appear and may remain for a long time if the patient is careless, and does not submit herself to proper treatment.

The age at which the change of life usually occurs in this country is between forty-five and fifty years. In the majority of cases it probably occurs at forty-seven; but it may be as early as thirty-eight or forty. This early cessation of the menses is most likely to occur in sickly women, in those weakened by some great shock, or in cases where the ovaries have been injured as a consequence of some severe fever.

In some women the change of life does not occur until a much later period than the average. It occasionally may be delayed to the age of fifty-five to fifty-six. Usually when menstruation commences at an early age, it ceases later, especially in strong, vigorous women. A fibroid tumour of the womb may delay the change several years.

The manner in which the climacteric occurs is very irregular. In about one woman out of seven the monthly flow stops suddenly and completely. In the great majority of cases menstruation becomes irregular, remains so for two or three years, and then entirely ceases. A common history is that one or two months are missed, and then the usual flow returns for a month or two. The discharge may be the same in quantity as before, or it may be less or it

may be more. After continuing for one or two months, the flow again ceases and then returns after another interval of absence. This period of irregular menstruation may last for two or three years.

Occasionally, as was said, the change occurs suddenly, and on the other hand, it is sometimes not completed for eight or ten years.

When a woman has not ceased to menstruate after the age of fifty or fifty-one, there is always a possibility that the flow is not true menstruation, but blood resulting from some ailment of the womb. In such cases, therefore, it is always desirable to consult a doctor without loss of time.

**Symptoms.** Certain unpleasant symptoms are very common at this period. Perhaps the most disagreeable are the "flushings" of the face and limbs, which affect five out of every ten women during the progress of "the change."

Frequently these are preceded by chilly sensations, then the face and head become flushed sometimes to a distressing degree. Very often this feeling of heat is also felt in the limbs. Frequently it is followed by disagreeable profuse perspiration, which may require a change of underclothing. These flushings are sometimes brought on by sitting in a warmer room or by any emotion. Hence they may greatly interfere with a woman's social life.

Leucorrhœa (whites) may also be troublesome, particularly at monthly periods when menstruation is due. At this time some women are exceedingly prone to corpulence, others become thin. But whether these changes are due to the cessation of the menstruation, or to age and the conditions of a woman's life, is not definitely settled. Rheumatoid arthritis, or rheumatic gout, is another of the evils to which women are particularly exposed at this period.

Nervous symptoms are very frequent. Headache is rather common, often taking the form of vague, disagreeable sensations at the top of the head. If headache occurs at the period when menstruation is due, there can be little doubt of its being a consequence of the change of life; but it may be at other times the result of ageing eyes, and be curable by the use of suitable glasses.



THE CHAMOMILE FLOWER

Many women suffer from indigestion at this time. Others have disturbed sleep. Accompanying these conditions there may be feelings of giddiness, and a drowsy, sluggish state during the day.

Backache is not at all uncommon. Some women describe extremely disagreeable sensations in the abdomen.

Constant depression of spirits is frequently complained of. This may be so extreme as to constitute melancholia.

In the popular view this period is supposed to be one of great liability to insanity. Doctors, however, are by no means agreed on the point. Some say that the climacteric itself brings with it a tendency to loss of reason; others assert that this is quite a delusion, proving their case by showing that men of the same age become insane in larger numbers.

Of course the drain on the strength occasioned by bearing and rearing children, the family cares so common at this time, and other causes, lessen a woman's resistance to a tendency towards insanity. But unless the tendency be there, it is probable that the change of life, a perfectly natural event, can in no way be considered as likely to cause insanity.

**Treatment.** The first thing necessary for a woman who is suffering from the troubles incident to the change of life is to realise that they are natural, and that they will pass away in the course of a few years. This will ease her mind, and prevent her from taking too gloomy a view of her condition. At the same time, however, she should realise that some increased attention to her health is advisable for a few months, or even years.

If at all constipated she should make suitable use of some mild aperient medicine. She must not overdo it, however, but must use the aperient only when necessary. It will be better to vary the medicine from time to time, rather than continue to use the same aperient. The following is a useful aperient for this period of life:

R

Confection of senna .. .	..	..	..	..	1 ounce
Confection of sulphur..	..	..	..	..	1 "

Mix well. Take one teaspoonful at night occasionally when necessary.

As an alternative, one to three grains of cascara may be taken at bedtime, or the following simple "dinner pill" may be tried:

R

Aloin .. .	..	..	..	..	12 grains
Extract of nux vomica ..	..	..	..	..	6 "
Alcoholic extract of belladonna ..	..	..	..	..	3 "

Make into 12 pills. Take one pill after the evening meal when required.

If inclined to become corpulent, she should reduce the amount of food a little, but if there is no tendency to grow fat, and especially if any loss of flesh is noticed, the patient must build herself up with a more nourishing diet. If





A CHEMICAL STUDENT



STUDYING HEART BEATS



THE CLINICAL SIDE: IN THE WARDS



STUDENTS WATCHING AN OPERATION IN THE THEATRE

she allows herself to neglect her meals, feelings of depression may become troublesome. Indigestible food, strong tea, and alcohol in all forms should be avoided. If the appetite is poor, one of the tonics prescribed under APPETISERS may be useful.

She should keep early hours and have abundance of sleep. Digestible, nourishing food, and plenty of sleep are the two great safeguards against mental troubles.

Warm baths at bedtimes, two or three times a week, are soothing to the nerves, and very serviceable in cases of sleeplessness.

Family or other cares should be taken as lightly as possible. Persistent effort to take a cheerful view of the incidents of life will do a great deal towards banishing worries and anxieties. At the change of life many women are exceedingly emotional; they should constantly strive to control themselves.

Women who can afford to go away from home for a time, now and again, will find great benefit from the change. With those who cannot manage this, every effort should be made, when the symptoms are severe, to get a few weeks at a convalescent home.

The troublesome flushings are often prevented by a dose of some purgative medicine, followed by a course of the bromides. The following are good prescriptions:

R

## PURGE

Magnesium carbonate (light)	..	..	..	2 drachms
Magnesium sulphate	..	..	..	6 "
Peppermint water	..	..	enough to make	6 ounces

Make into a mixture. Take one tablespoonful before breakfast when required.

R

## BROMIDE MIXTURE

Potassium bromide	..	..	..	..	45 grains
Arsenical solution	..	..	..	..	20 minims
Syrup	..	..	..	..	6 drachms
Cinnamon water	..	..	..	enough to make	6 ounces

Make into a mixture. Take two tablespoonsful after the midday and evening meals when required.

It should never be forgotten that the bromides should only be taken when really required.

Their use should never be continued unnecessarily, as symptoms of bromism (*see* BROMIDE RASH) may arise, or a troublesome "bromide habit" may be set up.

To check the excessive perspiration which is sometimes so troublesome at this period, belladonna is the most useful drug. It may be taken in five minim doses of the tincture twice or three times a day. Or the following mixture may be taken:

R

Tincture of belladonna	..	..	..	..	1 drachm
Bicarbonate of sodium	..	..	..	..	3 drachms
Peppermint water	..	..	enough to make	6	ounces

Make into a mixture. Take one tablespoonful twice a day after meals if perspiration is excessive.

In some cases tonics are called for, and of these probably the most suitable are quinine and strychnine. Iron may be required, but it should be remembered that this drug is often irritating to the stomach.

The following simple tonic often has a valuable bracing effect, increasing the appetite, and generally acting as a pick-me-up.

R

Quinine sulphate	..	..	..	..	24 grains
Dilute hydrobromic acid	..	..	..	..	2 drachms
Solution of strychnine	..	..	..	..	30 minims
Chloroform water	..	..	enough to make	6	ounces

Make into a mixture. Take one tablespoonful three times a day after meals.

In the case of full-blooded women who may suffer severely from a sense of weight in the region of the womb at the time the monthly flow is due, the medical attendant may give relief by the application of two or three leeches to the groin.

**CHAPS.** Chapped hands are usually the result of imperfectly drying the hands after washing, or holding them too close to the fire when cold. The underlying cause of chaps in most cases is an abnormal dryness or lack of oil in the skin.

People with fair complexions suffer more than brunettes, because the skin of the latter is usually of a more oily nature.

The direct cause of chapping is a temporary loss of elasticity due to the cold. The outer layers of the skin, as a result, refuse to stretch during ordinary muscular movements, and so break open.

Cold, dry winds, which cause rapid evaporation of the natural oil of the skin (or, in the case of the lips, of the natural moisture of the mucous membrane) are most conducive to chapping. The habit of warming cold hands before an open fire, because it also leads to rapid drying of the skin, is another common cause of chapping.

The little cracks which first appear should at once be attended to, or the break in the skin will extend down the deeper tissues. The tiny blood vessels will then be broken, and infection of the blood may take place from dirt becoming rubbed into the exposed and torn vessel.

Ulceration, which may be very difficult to cure, may follow.

Chapped lips are often very difficult to heal because they cannot be given any real rest. Their continuous movement, which keeps pulling open the tiny cracks, gives the torn tissues no chance to heal.

The first step in treatment of chaps, whether of hands, wrist, or lips, is to dry the parts thoroughly after washing, and, in the case of the lips, to avoid constantly moistening them with the tongue. A little bowl of bran should be kept at the side of the washstand, and the hands after washing should be plunged into this after drying with a towel.

Hard water should never be used by those subject to chapping, as it leaves the skin brittle and readily broken.

After running the hands for a few moments through the bran, a solution of equal parts of rosewater and glycerin should be well rubbed in. By the use of this application all remaining traces of dampness will be removed, while the glycerin helps to make up for the loss of the natural oil which is Nature's preventive against chapping.

Another useful lotion which may be used in the same way after the bran bath is the following :

R

Fuller's earth .. .. .	1 drachm
Boracic acid .. .. .	2 drachms
Glycerin .. .. .	10 "
Rosewater .. .. .	enough to make 6 ounces

Use lotion as directed above.

With some women chapping of the lips is a very real trouble throughout the cold weather. Some form of lip salve, such as the following, should therefore be regularly applied to the lips before going out into the cold air.

R

Oil of almonds .. .. .	1 part
Distilled extract of witch hazel .. .. .	3 parts
Lanoline .. .. .	10 "
Rose essence .. .. .	enough to perfume "

Make into a cream and rub over lips as a preventive against chapping.

People who sleep with their mouths open, besides being particularly subject to "cold in the head," nearly always have dry cracked lips.

Sufferers from chaps therefore should make a point of breaking themselves of breathing through their mouths, if this is their habit.

For severe chaps, such as speedily develop when ordinary chapping is neglected, nothing is better than a little boracic ointment applied at night and kept in contact with the skin with a light bandage.

Deep chaps of the lips should never be allowed to persist indefinitely, as permanent disfiguration may result. Sometimes when all medicinal applications fail a short course of X-rays brings about a speedy healing of the part.

**CHARBON.** Another name for Anthrax.

**CHARCOAL** is prepared by burning bones (bone-black) or wood without access to air. Bone and wood charcoal have much the same properties, absorbing oxygen and acting as deodorants.



Bone charcoal, in teaspoonful doses, is sometimes given internally as an antidote in alkaloidal poisoning, such as from morphine, strychnine, etc.

Charcoal is also prescribed in dyspepsia and flatulence. The dose here is twenty to sixty grains, and it may be given in powder, lozenges or biscuits. It must be taken in a dry state.

Sprinkled on the surface of a linseed poultice, charcoal forms a useful deodorising dressing for foul ulcers.

It is also much used as a tooth-powder.

**CHARCOT LEYDEN CRYSTALS** are pointed eight-sided crystals, sometimes found in the sputum of asthmatic patients, in the stools of persons suffering from catarrhal diarrhoea, and in the blood in the disease leukæmia.

Their presence is of no particular significance, and necessitates no alteration in the treatment of the ailments in which they occur.

**CHARCOT'S DISEASE** is a form of inflammation and disintegration of one or more joints which sometimes occur in locomotor ataxia. The joints most commonly affected are the hip, the knee and the shoulder. As a rule only one joint suffers, but several may be implicated. The joint is suddenly greatly increased in size from fluid being poured out into its cavity, and the ends of the bone making up the joint may later on become extensively worn away.

The joint becomes more movable than normal, and not uncommonly the limb is rendered useless by this flail-like character which the joint assumes. There is rarely any pain as long as the joint is left at rest. The affection is a degeneration due to the disease of the nerves supplying the joint, the local disease being part of the locomotor ataxia in which Charcot's disease occurs.

**CHEESE** varies much in digestibility and nutritive qualities. Some kinds are made from whole cow's milk and contain all the milk-fat. Among these are Cheddar and Stilton and Double Gloucester. Some forms of Stilton are still richer, cream being added to the whole milk in their manufacture.

Others are made from whole and skimmed milk mixed. These include Gloucester, Shropshire, and some American cheeses.

Other varieties are made from skimmed milk alone, such as Suffolk, and some Dutch cheeses.

Parmesan is made from the milk of the goat, and Roquefort from the milk of the ewe.

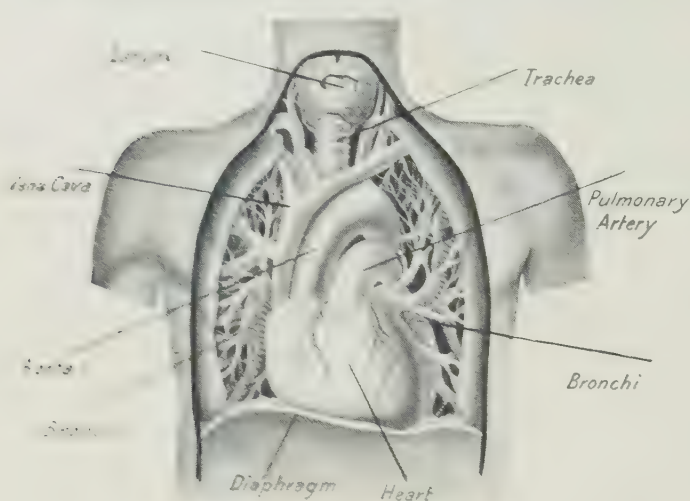
Among the hard cheeses are Cheddar, Chester, Edam, Parmesan, Roquefort, and the Dutch, American and Canadian cheeses.

Soft cheeses include Stilton, Camembert, Brie, gorgonzola, and cream.

The hard cheeses are at their best when nine to twelve months old. When new they are tough; when very old they are rancid. The soft cheeses do not keep wholesome long, and should be used soon after manufacture.

**Nutritive Value.** A small piece of cheese after lunch or dinner often aids digestion. It removes the clinging taste of sweets from the mouth and makes wine, liqueurs or coffee more pleasant.

In large quantities and when used as a food cheese can be digested by



THE CHEST CAVITY AND ITS CONTENTS : 1. RIBS CUT AWAY

strong stomachs, but it is not suitable for everyone. Dry, hard cheese requiring thorough mastication is better digested than soft cheese. Probably the best way to eat cheese is to mix it with milk and eggs. It is also rendered digestible by grating it into a powder,

and Dr. Robert Hutchison recommends that this powder be dissolved by the aid of bicarbonate of potash and then mixed with other food. As much of the bicarbonate as will lie on a threepenny piece will dissolve a quarter of a pound of cheese and render it much more digestible. Prepared in this way cheese is a valuable food for growing children.

Toasted cheese, or cheese strongly heated as in the Welsh rarebit, is very indigestible and often produces severe spasmodic pains in the abdomen.

The average nutritive value of cheese is from two to three times that of beef or mutton. This advantage is qualified, however, by the fact that few people can digest and assimilate cheese except in small quantity.

**CHELOID** (also spelled Keloid) is an overgrowth of the tissue of a scar, especially a scar left by burns. Keloid is also common in healed tuberculous ulcers. Hard projections appear on the margin of the scar, which grow and send out claw-like shoots. Sometimes there is no pain; in other cases pain and itching are complained of. The growths may disappear without treatment. More commonly they persist, and if removed, grow again.

A measure sometimes effective is to paint the scar with flexible collodion. As this dries it contracts and exercises pressure, which may abate the deformity. Radium and X-ray treatment have recently been used with much success in the treatment of keloid. In favourable cases after one or two exposures a pronounced shrinkage in the abnormal tissues follows, greatly lessening the disfigurement.

**CHELSEA PENSIONER** is the name of an old-fashioned and often very efficacious remedy for the pain and constipation in rheumatism in old people. It is composed as follows :

R̄

Guaiacum	..	..	..	..	..	2 parts
Sublimed sulphur	..	..	..	..	..	3 "
Carbonate of magnesia	..	..	..	..	..	2 "
Ginger	..	..	..	..	..	1 part
Treacle	..	..	..	..	..	12 parts

Dose : one teaspoonful.

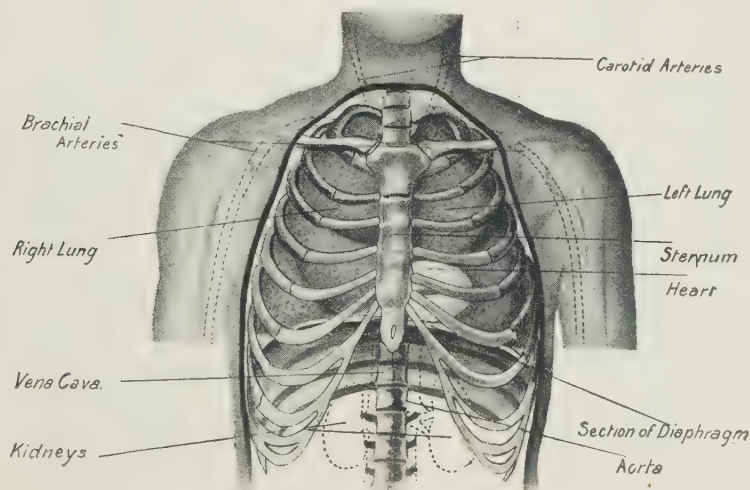
**CHEMOSIS** is swelling of the conjunctiva over the white of the eye.

**CHEST.** The chest is bounded by the breast bone and ribs in front, the ribs at the sides, and the spine and ribs at the back. Below it is closed by the diaphragm, a strong, muscular membrane which separates the chest from the abdominal cavity ; above is a narrow opening through which pass the wind-pipe, gullet, blood-vessels, and nerves.

It contains the heart, lungs, gullet, windpipe, bronchial tubes, numerous large blood-vessels and nerves, the thoracic glands of the lymphatic system, and usually the remains of the thymus gland, an organ which is large in the unborn child but withers away later on. The average circumference of the chest ranges from 33 to 40 inches in man.

The chest is often mal-formed, the following being common types of deformity.

**RICKETY CHEST.** In rickety children the soft bones tend to yield to pressure and the chest is consequently often bulged out in front, while a hollow runs down each side. Frequently nodules develop at the junction of the bony ribs and the cartilages which attach the rib-ends to the breast bone. When these knobs are very pronounced, running down each side of the chest, they are sometimes known as the "rickety rosary."



THE CHEST CAVITY AND ITS CONTENTS : 2, RIBS AND LUNGS

**BARREL CHEST** is one in which the ribs are raised somewhat into a horizontal position instead of sloping downwards. The chest is thus shortened and bulged. (*See page 151.*)

**PIGEON BREAST.** Here the breast-bone is pushed forward and the chest is angular instead of being rounded. This condition sometimes results from adenoids and from enlarged tonsils which make breathing difficult.

**CHEST DISEASES** include angina pectoris, bronchitis, consumption, emphysema, pleurisy, pneumonia, and heart diseases. This region may be the seat of aneurism and of various tumours. (*See under separate headings.*)

**CHEST, INJURIES OF.** These may be slight and have no worse consequence than a bruise or a broken rib; or they may be severe and result in damage to the lung, the heart, or the membranes covering these organs.

**Ribs.** The ribs may be fractured by a blow or by crushing of the body in a crowd, against a wall, or between two cars. In young people this is usually not a serious accident unless the broken rib penetrates a lung or some other important fleshy part. In old people, however, bronchitis and other serious consequences may follow.

The symptoms and signs are pain, felt more acutely on coughing or taking a deep breath, or feeling at the time as if a bone had snapped, and a grating sound (crepitus) heard with the ear to the patient's chest as it rises and falls, causing the broken ends to grate one on the other.

**Treatment** consists of careful strapping of the whole of the affected side of the chest with adhesive plaster.

The adhesive plaster, which can be obtained from any chemist, should be torn into strips about 2 inches wide and about  $2\frac{1}{2}$  feet in length. The patient first empties his lungs by breathing out. Then the operator, standing behind him (the patient should be stripped to the waist), applies one end of a piece of strapping, sticky side down, over the backbone at about the level of the last rib, bringing it forward and around the side of the abdomen and fixing the free end well past the middle line of the abdomen. The next piece is applied in exactly the same way, but a little higher so that its lower border overlaps the upper border of the piece below.

These strips, each of which is applied immediately after the patient has emptied his chest by breathing out, are continued upwards until the whole side, back and front of the effected side of the chest is enclosed in a jacket of adhesive plaster.

The plaster may be left on for a fortnight, by which time the fractured rib will be well on its way towards complete healing.

In addition to reducing the movement of the ends of the fractured bone, and so hastening healing, adhesive plaster strapping applied as above immediately lessens the pain which is sometimes very distressing after a broken

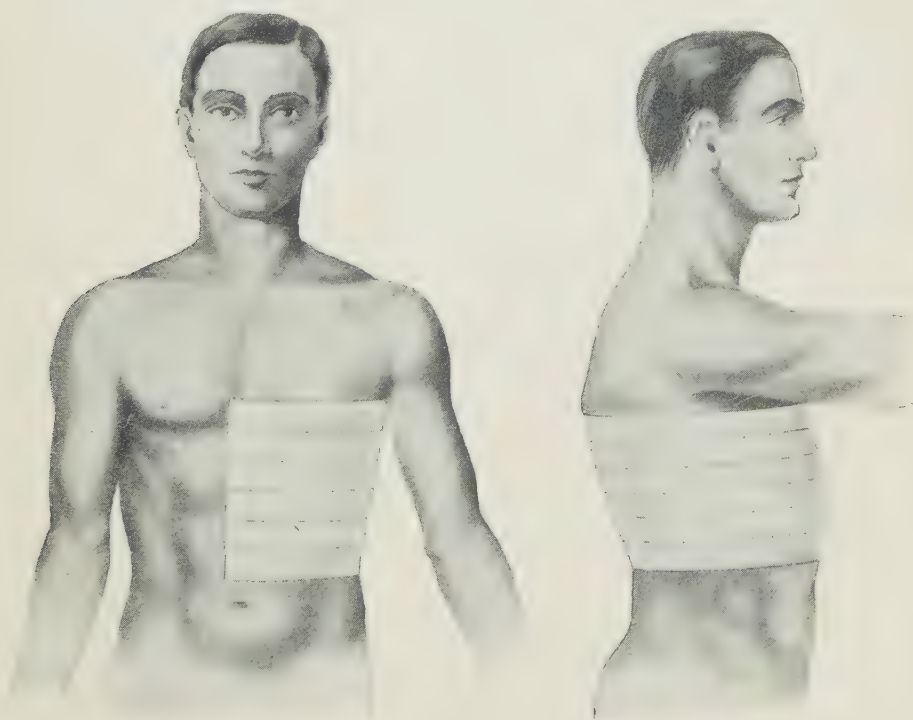


rib. The breast-bone is rarely fractured. When it is, the treatment is the same as in fracture of a rib.

A broken rib may injure the heart, the lungs, the membranes surrounding these organs (pericardium and pleura), and sometimes the diaphragm, and even organs below it in the abdomen, such as the liver, spleen, or stomach.

When a fractured rib injures the lung, without any external wound of the body being present, a puffy swelling may usually be found in the chest over the seat of the fracture. There is pain in taking a deep breath, generally some spitting of blood. In serious cases there may be shock, and when a blood vessel of any size is wounded a large quantity of blood may rush out of the mouth.

If the chest-wall is penetrated by a bullet, knife, or other instrument, the open wound greatly increases the danger of the accident. Such wounds in the chest may cause a great variety of injuries of different degrees of severity. The heart, or its covering membrane, may be wounded, in which case the outlook is always very grave. Wounds which penetrate the heart itself nearly always cause immediate death; wounds of the membrane (pericardium) may be immediately fatal, and, if not, they are followed by effusion of fluid, perhaps sepsis (poisoning), and more or less permanent evil consequences.



HOW TO STRAP THE CHEST FOR FRACTURED RIBS

When a penetrating wound of the chest injures a lung, there is great risk of sepsis (poisoning) from the entrance of the bacteria, and of pleuro-pneumonia.

Sometimes when the chest is severely crushed, with or without an external wound, the face becomes greatly congested and the eyes suffused with blood.

All severe injuries of the chest require the attention of a surgeon. Until he arrives the patient should be kept warm, and in a state of complete rest.

**CHEST, PAIN IN THE.** Agonising pain in the chest is the chief symptom in the disease angina pectoris (*which see*). Pain also is felt in some other diseases of the heart, especially after violent exertion, in pleurisy, diseases of the lungs, aneurism, rheumatism, and neuralgia. Probably the most common cause of pain in the chest is flatulent indigestion, and this often leads the sufferer to believe that his heart is affected, when in reality that organ is perfectly sound.

It is a great mistake for anyone to try to make his own diagnosis from pain in the chest. Many people become anxious and worried in this way, under the mistaken belief that they have some serious disease. Only an experienced doctor can draw correct conclusions from the various pains which occur in this part of the body.

**CHEYNE STOKES BREATHING** is a curious phenomenon in which the breathing stops for some seconds, then begins very slowly, and gradually increases until it becomes rapid and heaving. The whole cycle is then repeated.

Cheyne Stokes breathing is a symptom sometimes found in arterio-sclerosis (hardened arteries), fatty heart, apoplexy, sunstroke, and acute miliary tuberculosis. Its presence demands no special treatment other than that of the illness in which it occurs.

**CHICKEN BROTH** is a pleasant substitute for beef-tea, acting as an appetising stimulant, and therefore often cheering up the patient. It contains, however, very little real nourishment.

To make chicken broth, chop up a small chicken, or half a large one, and put it in a quart of water with a sprig of parsley or a blade of mace. Boil slowly for an hour, skimming from time to time. Then strain and serve broth very hot.

**CHICKENPOX** is one of the commonest of the acute contagious fevers of childhood. The germ has not yet been discovered. Occurring chiefly in epidemics in schools and institutions, the disease is one of the most contagious known.

Commonest in children between the ages of one and six, grown people also readily contract chickenpox when exposed to infection, if they have not already had the disease in childhood. As a rule, one attack protects for life. The disease has no relation whatsoever with smallpox, nor will a previous attack of chickenpox protect one against smallpox.

**Symptoms.** Within ten days or a fortnight after the child has been exposed to infection—*i.e.* in the company of someone suffering from or developing the disease—the first symptoms, slight fever, pain in the limbs, and perhaps vomiting, are noted. Within the next twenty-four hours the eruption or rash comes out, usually appearing first on the trunk, chest, or back, or it may begin on the face. First appearing as small, red, hard pimples, in a few hours these become filled with fluid. In another day or two this clear, transparent fluid changes to pus, and the little vesicles or pimples begin to dry into crusts. In another day or two these crusts drop off, usually leaving no scar.

The rash may not all appear on the first day, separate crops breaking out during the first two or three days of illness.

To differentiate chickenpox from other infectious fevers the mother should note the early appearance of the rash on the first day of illness, and its first appearance on the trunk, chest, and back. The little patient also is rarely very ill, and this mildness of the disease, together with the early drying up of the vesicles, distinguishes chickenpox from smallpox.

Rarely fatal in itself, the chief dangers to guard against are inflammation of the kidneys and broncho-pneumonia, neither of which are likely to set in if the patient is properly guarded from chills and draughts.

**Treatment.** As the disease is extremely contagious, the child should at once be isolated from the rest of the family. Unless the fever and general feelings of discomfort are marked, it will probably not be necessary for him to be in bed. Custards, puddings, and other light milk dishes should make up the diet.

The child should be prevented from scratching, as otherwise permanent scarring similar to the pock-marks of smallpox may result.

When all the rash has disappeared and the crusts have fallen off, the patient should be given a thorough hot bath and a good scrubbing with soap. Clean underclothes and outside clothes as well should be put on, and he may then mix with safety with the rest of the family. All underclothes worn by the patient during the disease should be well boiled, while suits or dresses, etc., should be hung up out of doors in the sun for several days before being worn again.

Beyond a mild purgative, such as a teaspoonful or so of castor oil, at the start, no medicines are needed in chickenpox. If the itching about the face is severe, the following lotion dabbed on at intervals during the day will soothe the irritation:

R:

Carbolic acid	..	..	..	..	..	I	teaspoonful
Glycerin	..	..	..	..	..	I	"
Rectified spirits of wine	..	..	..	..	..	4	tablespoonsful
Water	..	..	..	enough to make		$\frac{1}{2}$	pint

Sop on with a pad of cotton wool.

Should the urine become cloudy and reduced in amount, suggesting the possible onset of acute Bright's disease of the kidneys (*which see*), the physician should be sent for at once, and until his arrival the little patient should be kept in bed on a milk diet.

Any signs of cold in the chest should also suggest the possibility of bronchopneumonia developing (*which see*), and should lead to the strictest precautions against exposure to chills and draughts.

**CHICORY**, liked with coffee by some people, causes indigestion, languor, and headache in others. A strong infusion sometimes acts as a laxative upon the bowels.

Chicory has no stimulant action like coffee. Cheap coffee, in some cases, consists almost entirely of chicory.

**CHIGOE**, also called jigger and sand-flea, is a parasite found in South America, the West Indies, and in tropical Africa. The female penetrates the skin, most commonly of the feet, and lays her eggs within. The part swells, becomes very painful and sometimes ulcerates.

The parasite should be picked out with a needle as soon as the irritation of its burrowing is felt. As preventive measures, sound boots should be worn, and some volatile oil, such as oil of lavender, should be dabbed on the socks.

**CHILBLAINS** are painful purplish inflammations of the skin, sometimes running on to blebs and ulcers, usually appearing on the fingers or toes, due to exposure to severe cold. Sufferers are usually people whose circulations are not very active or who are generally rundown.

The chief symptoms are an intense aching and tingling, with swelling and purpling of the skin and sometimes severe pain. When blebs form and break, leaving ulcerating surfaces beneath, the chilblains are said to be "broken."

**Preventive Treatment.** As insufficient clothing and too tight gloves and boots tend to reduce the circulation, annual victims of chilblains should take care to avoid these causes. As anything which tends to lower the general circulation may bring on an attack in a person who has once suffered from chilblains, previous victims should therefore take particular precautions to dress warmly, and to eat plenty of readily digestible heat-forming foods, such as fatty foods, sweet dishes, etc., as the winter approaches. Gloves and boots should be loose, and the patient should avoid all sudden changes of temperature. Thus, just before going out into the cold, he should not overheat his skin by warming his hands before the fire. The same rule applies when coming in out of the cold. If the hands are cold, warm them by rubbing them together or washing them thoroughly in almost cold water. Placing them in very hot water or warming them before a fire only further shocks the local circulation, and tends to produce that lowered skin vitality which is the first step towards chilblains.



**Treatment.** The activity of the circulation should be improved by regular outdoor exercise, and the taking of some simple tonic for a few weeks every autumn. A teaspoonful of the syrup of the hypophosphites of iron, quinine, and strychnia, three times a day after meals, is an excellent tonic here. The morning bath should be warm, but not too hot, and should be followed by a thorough brisk rub down with a rough bath towel till the whole skin tingles. If the feet and hands constantly get cold during dressing, five minutes' rope-skipping in slippers on a thick rug will usually bring on a glow of warmth that will last for hours. The chilblain victim should take special care that his gloves are thick, loose, and warm, and that his shoes or boots, while comfortably fitting, are not tight enough to constrict the circulation of the feet. Woollen stockings or socks should be worn.

**Local Treatment.** As soon as the redness and swelling appears, paint the part with tincture of iodine, or else rub in softly a little camphor liniment. Be careful not to lower further the vitality of the skin of the part by bruising or injuring the chilblains.

If blebs form and break, cover the whole part with a piece of lint, spread an eighth of an inch thick with boracic ointment, and bandage lightly.

**CHILDBIRTH.** (See CONFINEMENT.)

**CHILD CROWING, or LARYNGISMUS STRIDULUS.** A peculiar spasm in which the child suddenly has great difficulty in drawing its breath, making a curious croaking noise in the effort. The ailment is rarely noted except in run-down, rickety children, or those debilitated by unhygienic surroundings.

The child may apparently be in good health, according to the mother, although the trained eye can usually detect more or less evident signs of rickets or malnutrition. The mother's story frequently is that whenever the child is "crossed" or in any way excited the crowing begins. The chest is suddenly fixed and motionless, and breathing ceases. The face turns deathly pale, with perhaps twitchings about the cheeks and mouth, and the head is thrown back. With equal suddenness the muscular spasm passes off, the child empties its lungs, and makes the peculiar crowing noise while drawing in the



THE CHICORY PLANT

next breath. A moment later all symptoms may pass off, and the child may be apparently in normal health, or another spasm may follow.

If the attacks are returning one after the other, all clothing should be loosened and the child stretched flat on its back, while cold water is sprinkled on the face and chest. As soon as possible the patient should be lifted into a hot bath, while the face, neck and chest are sponged with cold water.

If convulsions occur after the attack, the state of the digestion should be immediately looked to. A brisk purge, such as a quarter to half a teaspoonful of confection of senna, should be given, and any possible irritant in the diet should be removed. To quiet the general nervous instability and reduce the likelihood to convulsions, the physician may use bromides. Two to five grains of sodium bromide may be given three times a day to an infant a year old.

The following prescription may be used here :

R	Sodium bromide	..	..	..	..	15 grains
	Potassium bromide	..	..	..	..	15 "
	Syrup	..	..	..	..	2 drachms
	Water	..	..	..	enough to make	3 ounces

Take one tablespoonful three times a day until tendency to convulsions has passed off.

Good results may often be obtained by injecting into the rectum through a syringe five grains of chloral and ten grains of sodium bromide dissolved in three ounces of water. This dose would be suitable for an infant a year old.

To prevent a return of the condition, the general health should be built up by giving the child more outdoor exercise, and plenty of nourishing food with a fair supply of fats. A teaspoonful or more of some emulsion of cod-liver oil, taken three times a day after meals, is a good means of supplying any fat deficiency in the diet. If there are symptoms of rickets or nervous disease, these must, of course, be treated. (*See RICKETS.*)

If the infant is generally undeveloped and ill-nourished, the following mixture may be taken with advantage for a few weeks :

R	Glycerin extract of red bone marrow	..	..	1 ounce
	Liquid extract of malt	..	..	1 "
	Compound syrup of ferrous phosphate	..	..	1 "
	Water	..	..	3 ounces

Make into a mixture. Give one teaspoonful three times a day.

## CHILDLESSNESS. (*See BARRENNESS.*)

**CHILL.** Any exposure of the skin to a draught of cold air or to dampness may bring on a chill. The patient feels shivery, may be nauseated or sick, there may be severe headache, a degree or more of fever, and he feels he is in for more or less a severe illness. In a few hours all symptoms may pass off, or congestion of some internal organ may follow, when the chill is said to have "settled" in the lungs or liver, etc. The commonest results of a chill are a "cold in the head" and bronchitis. (*See these headings.*)



IN THE GROUND OF THE HOSPITAL



A GROUP OF PATIENTS



THE GENERAL ENTRANCE



LOOKING DOWN ON AN OPERATING THEATRE FROM THE STUDENTS' GALLERY

If the chill "settles" on the liver or the kidneys, the symptoms will depend on the organs affected. (*See LIVER and KIDNEY DISEASES.*)

Of little account in itself, a chill may often be the first symptom of some serious disease, such as pneumonia or smallpox. If no other symptoms are noticeable, precautions against further exposure to damp and cold, together with some warming beverage, such as a glass of hot lemonade, a mild purgative—such as two or three grains of cascara—and perhaps a day in bed, make up all the treatment needed. If the chill is ushering in some more serious disease, other symptoms, such as nausea or fever, are usually present to suggest the required treatment.

**CHILL AND FEVER** is a popular name for malarial fever, or ague. (*See MALARIA.*)

**CHIMNEY SWEEP'S CANCER** is the name given to cancer occurring in the scrotum from irritation caused by soot. It begins as a wart, which ulcerates and develops into an epithelioma (a form of cancer). The treatment consists in early removal by a surgeon. (*See CANCER.*)

**CHINCOUGH** is a common name for whooping cough.

**CHIRETTA** is an Indian plant which is sometimes used in medicine as a "bitter." Its action closely resembles that of calumba and gentian, which are much more commonly prescribed bitters. The doses are :

Infusion of chiretta	..	..	..	$\frac{1}{2}$	to 1	fluid ounce
Concentrated solution of chiretta	..	..	..	$\frac{1}{2}$	,, 1	,, drachm
Tincture of chiretta	..	..	..	$\frac{1}{3}$	,, 1	,, "

**CHLOASMA** is a name applied to the brown spots which sometimes appear on the faces of pregnant women, and to the brown stains often seen on the chest or back of tuberculous patients. The latter are sometimes a symptom of an affection called *Tinea versicolor*. This is caused by a fungus, and occurs in healthy young adults of both sexes as well as in consumptive people. Free perspiration, infrequent washing, and the wearing of wool underclothing are said to favour its occurrence.

**Treatment.** Well wash the part with soap and warm water applied on a washing glove or piece of flannel. Then rub in either a lotion of hypophosphite of soda (two drachms) and water (eight ounces), or a lotion of sulphurous acid (one ounce) and water (eight ounces).

This treatment must be continued for several days. The underclothing must be disinfected. It is best to wear linen or fine cotton next the skin.

**CHLORAL, or CHLORAL HYDRATE,** is much used by doctors for its quieting effect on the nerves and its power of producing sleep. It has, however, a depressing effect on the heart, and if taken for any length of time may bring on a very intractable "chloral habit." The drug, therefore, should never be used except on a physician's prescription. The dose is from five to twenty grains for a healthy grown person.



There is also a syrup of chloral, the dose of which is one half to two teaspoonsful. It should be remembered that any fluid preparation of chloral, unless well diluted and in moderate doses, may cause vomiting and diarrhœa as a result of its irritant action on the stomach.

Chloral is chiefly used in sleeplessness which is not due to disease or pain, but rather to a too active brain. It is useless as a pain killer, and so should never be resorted to when one is being kept awake by a neuralgic headache or a jumping tooth, etc.

On account of its irritant action on the stomach, it should never be given where indigestion or other stomach upsets are present.

On account of its depressant action on the heart and the breathing rate, it must be used with the greatest caution where there is any heart or lung disease.

**CHLORAL POISONING.** After an overdose the patient passes into a deep sleep, from which he can only be roused with difficulty, if at all.

Active measures must be taken at once to arouse him. Supported by two people, one on each side, he should be walked up and down and kept awake at all costs. The moment he can be made to swallow, an emetic of a teaspoonful of mustard in a glass of water should be given. Every half-hour he should be given a cup of very hot and very strong black coffee. If a doctor can be obtained at once, the stomach should be washed out (unless the emetic has acted thoroughly), and a hypodermic injection of strychnia be given by him.

**CHLORAL HYDRATE, BUTYL**, has powerful antiseptic qualities when used externally.

Internally it is sometimes prescribed because of its faculty of promoting sleep. The action of butyl chloral hydrate is similar to that of chloral hydrate, but it is less depressant to the heart.

The principal preparations are the following :

Chloretone, a local anæsthetic. One part in ten of zinc oxide forms a good dusting powder for burns or sores. Internally it sometimes relieves seasickness, and is a good hypnotic (sleep producer).

Chloralose, a hypnotic, and useful in mental excitement.

Chloralamide (*see below*).

**CHLORALAMIDE**, dose fifteen to forty grains, is a useful hypnotic or sleep producer, as it has little depressant action on the heart or breathing centres. Like chloral, chloralamide is useless where the restlessness or insomnia is due to pain.

Chloralamide is best given dissolved in a couple of teaspoonsful of brandy to which, before being taken, a wineglassful of warm water is added. Twenty grains taken in this manner at bedtime is a moderate dose for a healthy, grown person. It can be given in an enema when desirable.

The following chloralamide mixture has been recommended (Hale White) for insomnia and sea sickness :

℞	Potassium bromide .. .. .	1 drachm
	Chloralamide .. .. .	1 "
	Tincture of orange .. .. .	3 drachms
	Chloroform water .. .. .	.. enough to make 4 ounces

Make into a mixture. Dose : Two tablespoonsful.

Chloralamide is said to have the further advantage over chloral in that it never induces a drug habit.

**CHLORIC ETHER** is another name for spirit of chloroform. Dose, five to twenty minims, when repeated ; thirty to forty minims when only a single dose is given.

**CHLORIDE OF SODIUM, ZINC, etc.** *See under SODIUM, ZINC, etc.*

**CHLORINATED LIME, or BLEACHING POWDER**, is often used as a disinfectant for drains, etc. In medicine, the official solution of chlorinated lime, or chlorine water, is sometimes used as a lotion for dressing sloughing wounds.

**CHLORINE WATER** is prepared by shaking up one part of chlorinated lime, or bleaching powder, with ten parts of water. The resulting solution contains a small amount of chlorine gas which is a powerful disinfectant.

**CHLORODYNE** is a secret remedy very commonly used as a pain killer, and soother. The mixture is somewhat similar to the compound tincture of chloroform and morphia of the British Pharmacopœia.

On account of the powerful drugs it contains chlorodyne should be used with the greatest care. It is particularly dangerous for children and infants. The dose is from five to ten drops, but it should never be used except on a doctor's prescription.

**CHLOROFORM.** A drug widely used in medicine, on account of its properties of inducing loss of consciousness and deadening pain during surgical operations. (*See under ANÆSTHETICS.*)

Chloroform is also used in the form of a liniment, and internally in cough mixtures and digestive tonics.

The official preparations used in medicine are :

Compound tincture of chloroform and morphine, dose 5 to 15 minims.

Chloroform water, dose,  $\frac{1}{2}$  to 2 fluid ounces.

Chloroform liniment.

Spirit of chloroform, 5 to 20 minims for repeated doses ; 30 to 40 minims for single dose.

A drop of chloroform on a piece of cotton wool inserted into an aching tooth often gives immediate relief from the pain.

Chloroform water has a sweetish taste, and is often used to disguise bitter or nauseous drugs in mixtures.

**CHLOROSIS**, or "green sickness," is a form of anæmia common among girls and young women. It is practically unknown in men. (See ANÆMIA, page 73).

**CHOCOLATE** is a mixture of cocoa and sugar. Starch and flavourings are sometimes added.

While cocoa, to be used as such, is deprived of its fat to make it more soluble, the cocoa from which chocolate is made retains its fat. Hence chocolate may be slightly less digestible, but it is more nutritious than cocoa.

As a beverage, chocolate has the same stimulant action as cocoa. Eaten as a sweetmeat it is nutritious, but any considerable quantity interferes with the appetite for other food, while not supplying all that the body needs. It is far better as a beverage for children than tea or coffee.

Chocolate is now often grossly adulterated and adulterated chocolate is unwholesome. Pure chocolate melts in the mouth, contains no gritty matter, and leaves no bitter taste or astringent sensation.

**CHOKES DAMP** is the name given to the carbonic acid gas which collects in coal mines. It also results from the combustion of fire-damp, and is present in large quantity after an explosion.

For the treatment of poisoning by choke damp *see* CARBONIC ACID POISONING.

**CHOKING.** The commonest cause is the sticking in the throat of a fish bone, or a piece of meat "swallowed the wrong way." When under an anæsthetic during a surgical operation portions of vomited food may fall back into the windpipe, causing dangerous choking.



CHOCOLATE: NATURAL COCOA PODS AND LEAVES

**Treatment.** The patient, unless unconscious, should be immediately made to kneel on a chair or couch, with the head downward, and the body weight supported on the hands on the floor. In this position he should attempt to cough the obstruction out of the windpipe, while at the same time he should be given a few smart blows between the shoulder blades by someone standing beside him. If these means are not sufficient to remove the obstruction the patient's mouth should be clamped open by some hard object thrust between the back teeth, and then someone should thrust his forefinger well to the back of the throat, as far down as possible, and sweep it across the base of the tongue in an attempt to dislodge the obstruction from the windpipe.

If all these efforts fail, and the patient's attempts at breathing are becoming weaker, and if his increasing blueness and perhaps loss of consciousness show that he is in immediate danger of choking to death the physician, if present, should open the windpipe below the obstruction, so as to allow air to enter the lungs directly from the opening in the neck.

When it is a matter of life or death a doctor will not wait to secure surgical cleanliness, but will carry out the operation with any means that may be at hand, such as a pen-knife. The patient should be laid on the floor on his back, and a hard cushion should be placed under the neck, so as to throw the head back and push the larynx, or "Adam's apple," into prominence. Grasping the "Adam's apple" between the finger and thumb of the left hand, the palm of the hand being over the sufferer's chin, the operator kneels beside the patient's right elbow and thrusts the tip of a *thoroughly clean*, sharp pen-knife (the sharp edge upwards) into the windpipe an inch below the "Adam's apple."

The hard, rounded tube of the windpipe can be readily felt in the middle line of the throat, and the knife is driven into this to a depth of half an inch. Some force is needed to cut through the tough cartilages of the windpipe, but great care must be taken not to insert the knife too far.

If these directions are followed precisely there need be no danger in this small operation, by means of which life that would otherwise be lost may be easily saved.

There is some risk in performing this operation without the usual antiseptic precautions, but it may be necessary to run this risk in order to save life.

With the handles of two spoons the soft tissues over the wound can now be held back so as to allow free access of the air into the windpipe. If the patient is so far gone that he does not seem to be breathing now that there is a clear passage way into the lungs artificial respiration should be immediately begun. Kneeling in the same position as when performing the operation, place the palms of the hands on the sides of the ribs, with the fingers towards the armpits, and then gently squeeze the lower ribs inwards and upwards towards the base of the neck for about two seconds, and then gradually relax the pressure for the same length of time. The squeezing inwards of the ribs





HOW RELIEF MAY BE GIVEN IN URGENT CASES OF CHOKING WHEN THE MORE USUAL SURGICAL METHODS ARE NOT AVAILABLE

imitates the natural breathing out of the breath, and the gradual removal of the pressure (allowing the ribs to expand) takes the place of the natural drawing in of the breath. In this way sufficient air can often be drawn into the lungs artificially to restore consciousness to the point where the suffocating man can carry out his breathing for himself. For further methods *see under* ARTIFICIAL RESPIRATION *page* 139.

Any bleeding of the wound in the neck can be readily controlled by pressure with a clean dry handkerchief until the doctor's arrival.

**CHOLÆMIA** is a condition not unlike uræmia, which may arise in the course of a number of diseases from interference with the function of the liver. Among these are yellow fever, infective jaundice, cirrhosis of the liver, phosphorus poisoning and arsenic poisoning. It is due to some abnormality leading to bile circulating in the blood instead of being excreted from the body in the usual fashion.

**Symptoms.** The skin may be of a deep yellow, but is often only slightly tinged. There is usually high fever, sometimes delirium and convulsions, but more frequently prostration and apathy. Stupor ensues, and finally the patient passes into a state of deep unconsciousness.

**Treatment** is that of the condition in which the cholæmia occurs. Sometimes the symptoms are relieved by inducing free perspiration,

by hot air baths, hot packs, etc. (see pages 197 and 298), and by giving as a purge four to eight grains of blue pill.

**CHOLAGOGUES** are medicines to stir up the digestive system, any cause the liver to form more bile. At the same time the bile which normally accumulates in the gall bladder is hurried on into the intestine.

The commonest cholagogues are calomel, aloes, and sodium phosphate. These drugs are commonly prescribed with purgatives when the constipation is largely due to sluggishness of the liver. (See BILIOUS HEADACHE.)

**CHOLANGITIS** is inflammation of the bile ducts. It may be acute or chronic. A number of widely differing causes, such as a plug of mucus or a stone in the duct, a thickening of the bile owing to some affection of the liver, or an infection with the colon bacillus, the typhoid bacillus, or the pneumococcus, etc., may give rise to this condition.

**Symptoms.** The chief symptoms are pain in the region of the liver, shivering fits, and jaundice.

**Treatment.** Give the patient a warm bath, put him to bed, and apply cloths wrung out of hot water to the liver region. The food should be liquid, milk, milk and soda, thin gruel, and whey. Keep the bowels open with some saline draught, such as a small teaspoonful of Epsom salts in the morning, but avoid purging the patient.

**CHOLECYSTITIS** is inflammation of the gall-bladder. There are three chief types, the catarrhal, the suppurative, and the phlegmonous, depending on the acuteness of the inflammation. Cholecystitis is sometimes found in connection with the presence of gall-stones, but may arise in their absence, from infection.

**Symptoms.** Severe paroxysms of pain are felt, usually on the right side beneath or below the lower ribs. Sometimes the pain is felt much lower down in the abdomen so as to be mistaken for a symptom of appendicitis. Then follow vomiting, swelling of the abdomen, and a rise of temperature.

Jaundice is not often present except when the disease is accompanied by gall-stones. The bowels are often extremely constipated.

Cholecystitis is always a very serious ailment. Recovery often occurs from the catarrhal variety, but the other two forms usually end in death within a few days.

**Treatment.** Secure complete rest. The patient must be kept absolutely at rest in bed. To relieve pain the physician will probably have to resort to morphine injections. The circulation must be kept up by giving stimulants, such as strychnine, ether injections, etc. On account of the continuous vomiting the patient must be nourished with enemata of milk and other liquid food. (See nutrient enemata *under treatment of* APOPLEXY page 122).

In the suppurative and phlegmonous varieties an early surgical operation offers practically the only chance of recovery.



HOW NEW YORK FIGHTS SUMMER CHOLERA: A FLOATING HOSPITAL FOR CHILDREN

**CHOLERA.** Three varieties are described. (1) Cholera nostras or "summer cholera" of grown people. (2) Cholera infantum or "summer complaint" of babies, and (3) true Asiatic cholera.

**SUMMER CHOLERA** or cholera nostras, is a common complaint in this country during intensely hot spells in summer. Usually brought on by the eating of over-ripe or unripe fruits or foods which have been tainted by the heat, the disease may attain the proportions of an epidemic, and spread throughout a household or whole districts. Bad drains or polluted drinking water may give rise to summer cholera.

**Symptoms.** Violent purging, and vomiting with intense abdominal pains, cramp in the limbs, and extreme prostration are the chief symptoms. The patient's hands and feet become icy cold, the face appears drawn and bluish, and in children, or patients of low vitality, death may occur from heart failure and exhaustion. The great majority of cases, however, recover almost as quickly as they become ill if proper treatment is obtained promptly.

**Treatment.** The patient should immediately be put to bed between warm blankets with hot water bottles about the feet. The vomiting and purging are Nature's methods of getting rid of the poisonous substances in the stomach and intestines, so no effort should be made to control them for at least the first twenty-four hours. The thirst is frequently excessive, so the patient may have as much cool, but not icy cold, water as he likes, and to this may be added ordinary vinegar in a proportion of a tablespoonful to the glass of water. Experience in hot countries has shown that vinegar taken in this way has a very destructive effect on the micro-organisms in the intestines.

Warmth over the abdomen in the form of a hot water bag, or cloths wrung out in very hot water and sprinkled with a few drops of turpentine and then applied directly to the skin often give great relief.

If the patient is much collapsed, teaspoonsful of very hot coffee with a little brandy may be given at intervals. No attempt to take food should be

made until all the acute symptoms have passed off. The starving of the germs in the intestine by withholding from them all sustenance in the shape of the patient's food is a most important part of the treatment, after the immediate diarrhoea and vomiting have ceased.

### INFANTILE CHOLERA, CHOLERA INFANCIUM or SUMMER DIARRHŒA.

The chief causes of this complaint, which kills thousands of city babies every hot spell are (1) a generally run-down state of health, due to previous illness or bad feeding; (2) very hot, thundery weather; and (3) general unsanitary conditions. In babies who suffer from this combination of circumstances, the germs of the disease find a fertile field for development. The germs in the great majority of cases find their way into the system in milk which has been kept too long, or is impure.

**Symptoms.** Sudden violent vomiting, followed by severe diarrhoea in an infant with the temperature at first raised to 102 to 104°, and then dropping to, perhaps, a degree below normal (98.2° F.), with extreme prostration and a cold clammy skin, make up the usual history of an attack.

**Preventive Treatment.** As a large percentage of these cases terminate fatally despite the most skilled treatment, preventive measures are of the utmost importance. At the beginning of any hot spell, more than ordinary

precautions should be taken over the baby's food. Its bottles and nipples should be thoroughly scalded after each feeding, his milk should be perfectly fresh, and either sterilised or bottled. Milk is often contaminated by flies and germ-carrying dust particles getting into it. All milk, therefore, should always be kept in tightly closed receptacles in a cool place, and, in order that it may be as fresh as possible, it is best to buy half the quantity needed daily morning and evening rather than the whole day's supply at one time.



A CARRIER OF SUMMER CHOLERA AND OTHER DISEASES :  
THE PROBOSCIS OF THE HOUSE-FLY

Highly magnified.



One of the commonest methods of germs finding their way into the baby's stomach and intestines is through a dirty "comforter." The baby drops this out on to the floor and then promptly pops it back into his mouth, perhaps covered with germ-carrying dust.

Wherever one baby in a house is suffering from infantile diarrhœa, all the others are in greater danger than usual of contracting the disease through flies settling on the soiled napkins, etc., of the first baby, and then finding their way into the milk of the others.

**Treatment.** The first

aim of treatment is to clear the digestive system of the germs causing the disease, rather than the mere stopping of the vomiting and diarrhœa. In the first place, all food on which the germs can flourish and multiply in the bowels must be withheld. Twenty-four to forty-eight hours absolute starvation will not harm the baby, but it will seriously reduce the vitality of the harmful germs in his intestine.



FOOT OF THE HOUSE-FLY ON WHICH DISEASE GERMS ARE CARRIED  
Highly magnified.



EGGS OF HOUSE-FLY ON A RUBBISH HEAP  
This heap was photographed outside a dwelling-house. From it came thousands of flies, laden with germs and dirt.



THE COMMON HOUSE-FLY AND THE STAGES OF ITS DEVELOPMENT  
A fly can lay 85 eggs in 10 hours. The larvæ are hatched in 8 or 9 hours and in 5 to 7 days the fly emerges.

To wash out the offending germs further, twice a day a pint of warm water may be injected into the bowel with a syringe, and the baby should be allowed to drink as much cool water as it will during the day.

Drugs are of little value in infantile cholera. After twenty-four hours *complete starvation*, the infant may be given a tablespoonful of whey every hour for three hours, after which period the amount may be gradually increased up to four tablespoonsful every few hours. On the following day fifteen drops of cream might be added to each feeding of whey if there is no return of the diarrhoea, and a day later, a mixture of one ounce of boiled milk and one ounce of whey with the cream may be given, and if no return of the symptoms follow, the child may be gradually returned to its ordinary milk diet.

During the attack the little patient should be kept between blankets with a hot water-bag at the feet. If collapse occurs, the skin getting cold and clammy, and the child practically unconscious, a little stimulant such as ten to twenty drops of brandy may be given.

Mothers should remember that even mild summer diarrhoea in an infant under a year old may at any moment become a serious, if not fatal, disease, and not a moment should be lost in calling in a physician. Even with the best of medical treatment, thousands of children die every year from this complaint.

**ASIATIC CHOLERA, OR TRUE CHOLERA.** Constantly appearing in epidemic form in Asia, Russia and India, cholera outbreaks of any great severity are rare in Europe, though from time to time small epidemics have appeared in Italy and other southern countries. The last wide-spread epidemic was in Hamburg some twenty years ago, when more than 20,000 people lost their lives.

The disease is caused by the "comma bacillus," which was discovered by Professor Koch in 1884.

Anything which leads to intestinal upset or diarrhoea in a district where cholera is prevalent greatly increases one's chance of contracting the disease. The commonest mode of spread is through drinking water which has been fouled by sewage coming from houses or hospitals where people are suffering from the disease. The disease cannot be spread directly from one person to another on the breath or by mere nearness. Thus a nurse who drinks no liquids contaminated by the germ, and who does not infect herself by carrying germs to her mouth in her food or on her own hands, is in no danger of catching the disease, though she may spend whole days in close attention on cholera patients.

**Symptoms.** Diarrhoea indistinguishable from that of ordinary intestinal irritation is the first symptom. For the first day or two, perhaps, the diarrhoea may be comparatively mild, and the patient may not realise the seriousness of his disease. After a varying period, however, the diarrhoea suddenly becomes very intense, the discharges being of a "rice-water" consistency, and accompanied with great pain, severe vomiting, cramps in the abdominal and

limb muscles, and complete collapse. The patient's face appears to suddenly fall away, the eyes are staring, and the skin is dry, cold, and wrinkled. Death may occur at any time during this stage of the disease.

Where recovery takes place the first sign of improvement is usually a return of warmth to the body. The vomiting and diarrhœa and cramp gradually pass off, the pulse, which has perhaps been almost imperceptible, now improves, and convalescence lasting from a few days to several weeks sets in. Relapses sometimes fatal, are apt to take place during the convalescent stage.

The disease, which kills almost half of those it attacks, is particularly fatal to the very young and the very old.

**Treatment.** Whenever cholera is suspected in a district extra precautions should be taken to prevent any upset of the normal digestion. No fruits should be eaten raw, all drinking water should be thoroughly boiled, and everything in the least indigestible should be avoided.

Should diarrhœa set in when cholera is about an effort should be made to clear out the offending germs from the stomach by taking from one to two tablespoonsful of castor oil, to which should be added twenty drops of tincture of opium.

When the disease has got to the severe second stage medicines by the mouth are of little avail. The patient at the very start of the attack should be put to bed between blankets, with hot water bottles over the abdomen and at the feet. To relieve the sometimes excruciating cramps the physician may give hypodermic injections of one quarter of a grain of morphia at four-hour intervals. At the height of the disease when the patient is totally collapsed, with dry, cold skin, and imperceptible pulse, every effort should be made to keep up the body heat by wrapping him in blankets warmed before the fire and by the extensive use of hot-water bottles or bricks heated in the fire and wrapped in blankets. As the patient is often unconscious to local pain great care must be taken not to burn him.

Intense thirst is a common symptom at the height of the disease. Soda water, or plain, boiled water cooled and mixed with one-fifth its volume of ordinary vinegar may be given at frequent intervals to relieve this and to attempt to allay the vomiting. To revive the sinking pulse two or three tablespoonsful of strong brandy and soda may be given every two hours during the collapse stage. As this stage passes off and the patient begins to react with



THE CHOLERA BACILLUS

less vomiting and a cessation of the diarrhœa, a tablespoonsful of whey or sterilised milk may be given, at first every two hours, and later in increasing doses.

As the disease is spread almost entirely through drinking-water or food becoming contaminated by the patient's discharges, all soiled bedclothes, nightclothes, etc., should be soaked in a solution of one part of carbolic acid to ten parts of water before being sent to the laundry. The discharges themselves should be at once mixed with an equal volume of 20% carbolic solution in a closed metal pail, and allowed to stand for at least an hour before being emptied into the water closet.

**CHOLERINE** is the name sometimes given to cases with very slight symptoms of cholera when an epidemic is present, and which may not be actual cholera.

**CHOLESTERINE** is a substance present in the bile, brain, and to some extent in most of the tissues. Gall stones and particularly white gall-stones are almost entirely composed of it.

**CHONDROMA**, a hard tumour composed of cartilage. It is one of the "benign" tumours, and when removed does not grow again. Chondromata most frequently grow from bones, but sometimes from the breast, the thyroid and parotid glands and other parts.

No treatment is necessary as a rule unless the chondroma suddenly begins to increase in size, becomes painful, or suggests the possibility of becoming cancerous.

If the tumour causes disfigurement it can be removed by a surgical operation.

**CHORDEE.** The painful erection which sometimes occurs in the course of gonorrhœa. It generally may be relieved by the application of cold. When there is a tendency to its repeated occurrence, this very painful condition may be controlled by giving 15 grains each of bromide of potassium and bromide of ammonium at bedtime, or by a suppository of opium and belladonna placed in the rectum.

**CHOREA, OR ST. VITUS'S DANCE**, is a nervous disease of childhood causing the patient unconsciously to jerk the hands about, twist the head, pull faces, or wink one eyebrow.

Much more common in girls than in boys, it is usually first noticed about the age of ten. An inherited nervous disposition, general debility, fright, or



**CHONDROMA—A HARMLESS TUMOUR**  
Chondroma is a "benign" tumour composed of cartilage. When removed it does not grow again.  
Guy's Hospital Museum.





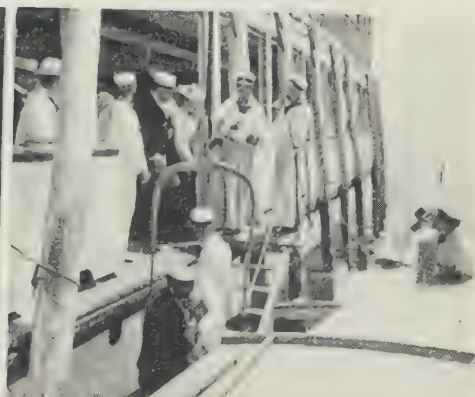
ON THE UPPER DECK OF THE FLOATING HOSPITAL



CRIBS IN ONE OF THE SHIP WARDS



EXAMINING PATIENTS



LITTLE PATIENTS COMING ABOARD

THE "EMMA ABBOTT" FLOATING HOSPITAL FOR CHILDREN AT NEW YORK FOR SUMMER CHOLERA AND OTHER INFANTILE TROUBLES

over-precociousness of mind are considered predisposing causes. Chorea is now known to have some close relationship to rheumatism.

**Symptoms.** As a rule the first thing that the mother notices is that her child is more fidgetty than formerly. Instead of sitting quietly at table or when reading the patient is constantly jerking her limbs or her hands or her head about, or perhaps pulls faces. Instead of walking quietly the child's gait may become a series of irregular, jerky movements.

The continuous overworking of the muscles soon has an effect on both mind and body, and the child's temper may be affected whilst at the same time the general health becomes rundown. During sleep, as a rule, all symptoms pass off, except in very severe cases.

**Treatment.** The all-important first step is to remove the child from the society of all other children (as at school, for example), because the teasing and constant attention called to her peculiarity by her playmates always aggravate the disease. The child's diet should be gone over carefully with a view of removing from it any articles of food which cause even slight symptoms of indigestion.

All lessons and schooling should be given over indefinitely. The patient should be outdoors (in the country, for preference) as much as possible, and she should have nine or more hours' undisturbed sleep in a well ventilated bedroom every night. If the patient is anæmic some simple tonic such as the following should be taken regularly for a month or more. (*See also ANÆMIA.*)

R	Iron and quinine citrate	..	..	..	..	30 grains
	Spirit of chloroform	..	..	..	..	30 minims
	Syrup	..	..	..	..	3 drachms
	Water	..	..	..	enough to make	4 ounces

Make into a mixture. Give one teaspoonful three times a day after meals.

Arsenic, in small doses long continued, often gives good results, but this of course, being a strong poison, can only be prescribed by the physician in attendance.

In severe cases where there are signs of rheumatism or heart trouble the child should be kept in bed while the rheumatism is treated with sodium salicylate by the attending physician, or until the heart abnormality passes off.

Sometimes in advanced cases the child may hurt itself by throwing about its limbs in bed. It may, therefore, be necessary to restrain the movements by tying the limbs or having a nurse in constant attendance.

To relieve the jumpiness at night and to induce sleep in severe cases of chorea powerful sedative drugs may be needed. Five grains of chloral hydrate with ten grains of potassium bromide in a tablespoonful of peppermint water may be given, one dose in the late afternoon and the other at bedtime, for a patient of nine years of age if the physician in attendance considers the child's heart sufficiently strong to withstand the known depressant effect of these drugs.

An important point in the treatment is to keep the bowels regularly open every day. Castor oil in doses from one to three teaspoonsful will usually accomplish this.

A perfect cure may be confidently expected in the great majority of cases, where there is no severe heart trouble, if the disease is properly treated on the above lines from the start. However, if allowed to run on chorea may lead to a permanent lowering of the patient's nervous vitality, and may prove the stepping stone to future serious nervous or mental disease.

**CHORODITIS** is an inflammation of the choroid or middle of the three coats of the eye. The poison of syphilis in the blood is the commonest cause of this form of eye inflammation. The inflammation occurs in spots or patches on the back of the eye, and the resulting defect of vision depends on the situation of these patches. The patient notes that on looking at any flat, white surface a number of blurs or black patches seem to appear. The only treatment is mercurials and iodides as in other forms of syphilis. (*See under that heading.*) Although further extension of the trouble may be prevented by rigorous anti-syphilitic treatment, nothing can remove the blind spots once they have formed.

**CHOROID** is the middle one of the three coats of the eye, the inner being the retina, and the outer the sclerotic. (*See EYE.*)

**CHROMIC ACID** is sometimes used in medicine on account of its powerful caustic action.

One part of the acid in forty parts water is sometimes used as a lotion in chronic ulcers with foul discharge.

**CHRONIC DISEASES** are those which last a long time. In acute diseases the symptoms soon reach their greatest development, and then shortly afterward subside. Acute diseases may, however, merge into the chronic form.

**CHRYSAROBIN**, on account of its irritant qualities when applied to the skin, is often used when it is wished to stimulate a slight local inflammation in chronic skin diseases, such as certain eczemas, and psoriasis. Chrysarobin stains everything with which it comes in contact a deep yellow.

**CHYLE** is the mixture of lymph and fat in the lymphatic vessels, leading from the intestine. The lymph is the blood fluid which has exuded from the capillary blood-vessels, and has been collected by the lymphatics; the fat is the fatty contents of food absorbed by the lymphatics from the intestine.

This name is also sometimes given to the partly digested food in the intestine.

**CHYLURIA** is the name given to a milky condition of the urine which occurs in one of the forms of disease caused by the filaria parasites. (*See FILARIA.*)

**CHYME** is the mass of food in the stomach after it has been mixed with the digestive gastric juices and reduced to pulp.

**CICATRIX** is another name for the scar left after a wound or ulcer has healed. In clean-cut wounds, as by a knife, which heal by "first intention," little or no perceptible scar is left. But when a wound suppurates and matter is formed, some of the skin is destroyed and a permanent scar remains.

After burns and scalds the scar is sometimes very large in size. It is formed of fibrous tissue and this gradually contracts. If the injury is situated over a joint, this contraction may cause great deformity. To diminish contraction, antiseptic treatment of the wound should be carried out so as to lessen the amount of suppuration. Pieces of skin should be grafted on the wounded part, and the limb should be kept extended or in the position of greatest usefulness by means of splints. Actual contraction should be treated by strapping or rubber bandaging, which promote absorption of the scar tissue. This should be followed by skilful massage and extension of the limb.

Scars are sometimes painful, and they may be the seat of unpleasant itching. They are of low vitality and liable to several diseases. Ulceration, for instance, is common after even a slight injury, and is sometimes very difficult to cure.

Severe neuralgia may result, particularly in the scar left after amputation of a limb. It is generally due to a nerve being compressed.

Cheloid, or keloid, is the over-growth of scar tissue, hard projections forming round the margin. If these are removed, they have a pronounced tendency to grow again. Covering the scar with collodion sometimes brings about the absorption of the projections.



CINNAMON.

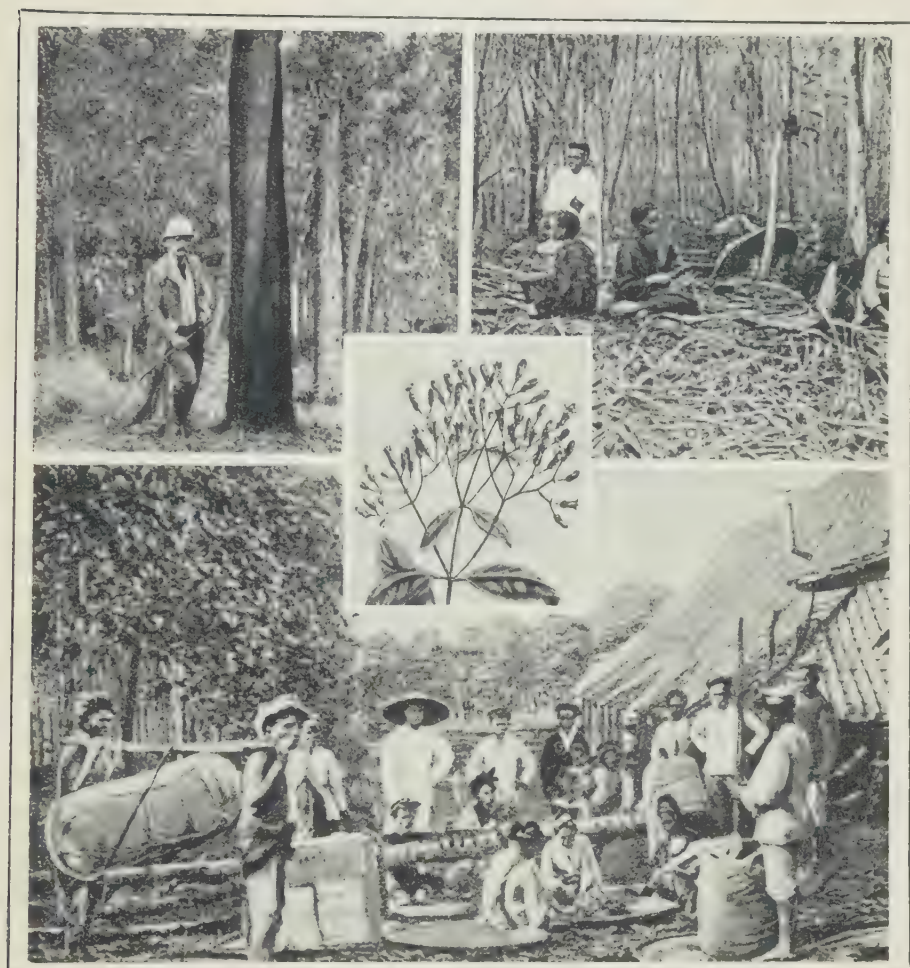
Malignant tumours may grow in a scar. They usually begin in the form of a wart, which soon ulcerates. These should be promptly cut out.

Radium treatment is sometimes very efficacious in stopping keloid growth, and causing any over-growth of scar tissue already present to be absorbed.

**CIDER** is really a wine of about the same alcoholic strength as beer (3 to 10 per cent.). Bottled cider and imported American cider usually contain less alcohol. Cider is an acid beverage, a tumblerful containing acidity equal to about twenty grains of tartaric acid.

Opinions differ as to its wholesomeness. There are some people whom





THE CINCHONA TREE AND CINCHONA BARK

Above, at the left, is a photograph of a cinchona tree, which has been stripped of bark. At the right natives are cutting bark into strips. In the centre are the leaf and flowers (*Cinchona officinalis*); and at the bottom collected bark is ready for transportation by natives.

it suits; others in whom it produces unpleasant effects. The latter, however, are often due not to pure cider, but to the adulterated article so commonly sold. Lead colic may be caused by cider made in leaden presses.

**CINCHONA BARK** is obtained from the dried branches of a South American tree. It contains numerous important constituents, the chief of which in medicine is quinine. The official dose of cinchona bark is three to fifteen grains, but much larger amounts are often given in malaria.

The common preparations of cinchona bark are :

The liquid extract of cinchona bark ..	dose	5 to 15 minims
The tincture of cinchona .. ..	..	1/2 " 1 drachm
The compound tincture of cinchona ..	..	1/4 " 1 "

The action of cinchona bark is practically the same as that of quinine.

**CINNAMON** is the bark of a tropical tree. It is used as a condiment because it stimulates digestion through its mild irritating action on the stomach linings. Cinnamon water in teaspoonful doses half an hour after meals is sometimes used in flatulent indigestion. Many of the liquid cinnamon preparations, however, contain large percentages of alcohol, and great care should be taken in their use.

**CIRCULATION, THE.** The blood from the limbs, head, chest and abdomen finds its way from a number of collecting veins into the right upper chamber (right auricle) of the heart. When the heart beats, the walls of this chamber contract down, forcing the blood through a trapdoor or valve into the right lower chamber or ventricle. This ventricle has thick muscular walls, and when it in its turn contracts the blood is forced, not back through the trapdoor into the upper chamber whence it came, but into the pulmonary artery towards the lungs. Passing through the pulmonary artery it finally reaches a fine network of very thin-walled little vessels, called capillaries, threaded amongst the air cells of the lungs. Through the walls of these tiny vessels, or capillaries, the gaseous impurities in the blood (carbonic acid gas, etc.) are thrown off into the air-cells of the lung, whence they are breathed out of the body, and at the same time oxygen from the fresh air which has been breathed into the lungs is absorbed by the blood.

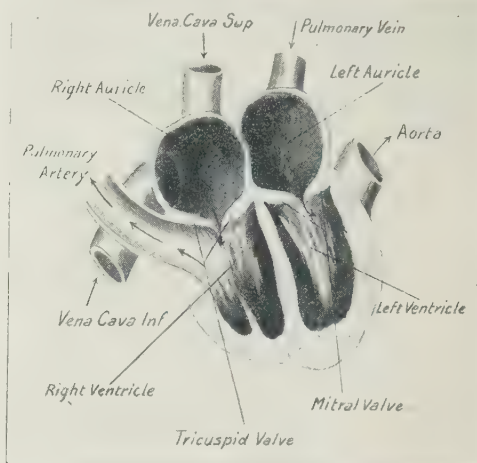
The blood which has thrown off its impurities and become, so to speak, recharged with oxygen, is collected into the pulmonary vein and carried to the left upper chamber of the heart (left auricle). Here, again, at the start of the heart-beat or heart-contraction, the blood passes through another trapdoor or valve flowing into the left lower chamber or left ventricle of the heart. The walls of this chamber are of very thick powerful muscle, and when they contract in turn, the contained purified blood is forced into the main distributing artery, the aorta, through the branches of which it reaches every portion of the body.

The further it gets from the heart the smaller become the branches of the arteries through which the blood passes, until finally it enters into the most minute capillary arteries (similar to the lung capillaries) which connect with similar capillary veins. Passing then from arteries to veins, through this fine capillary network, the blood is collected into veins which constantly increase in size and finally empty their contents into the right upper chamber of the heart.

The main bulk of the blood of the body is thus constantly moving through a continuous circle. The blood from the walls of the intestines, however, after it has absorbed certain of the products of digestion, nutriment, etc., through the glands in the intestinal linings, is carried by a separate system of vessels called the "portal circulatory system," to the liver. Here it passes through another fine network of capillary vessels, giving up certain of its

constituents, and then being collected again into a large vein which carries it to the right upper chamber of the heart to begin again, with the rest of the circulation, a new cycle.

Blood carried by an artery (except the pulmonary artery) is of a bright scarlet colour from the oxygen it has absorbed in its passage through the lungs. The blood in the veins and in the pulmonary artery, because it is laden with carbonic acid gas, is much darker in colour. (*See also pages 241, 244; and page ii. of supplement following page 128.*)



SECTION OF HEART SHOWING AURICLES, VENTRICLES, AND VALVES  
See description of heart circulation on page 412.

**CIRCULATORY DISORDERS.** Anything which weakens the strength and rhythm of the heart-beat will be followed by disorders directly due to the weakened circulation. The commonest example of this is the constant coldness of the hands and feet of the anæmic, generally run-down person, whose circulation is below par. Chilblains, dropsy, hæmorrhoids, and varicose veins (*see these headings*) are other examples or symptoms of weakened circulation.

**Treatment.** For the treatment of depressed circulation due to active heart or kidney disease, or degeneration of the arteries, etc., see under the headings of these causative diseases.

In the minor cases where the circulation is chronically poor, yet there appears to be no organic disease, where the symptoms are constant chilliness in winter, cold hands and feet, inability to get warm after a cold bath, etc., a six weeks' course every autumn of some bracing tonic pill, such as the following, often stimulates the circulatory system sufficiently to increase greatly one's comfort throughout the whole winter.

Rx	Quinine sulphate	..	..	..	..	50 grains
	Strychnine	..	..	..	..	1 grain
	Iron pill	..	..	..	enough to make	250 grains

Make into 50 five-grain pills. Take one pill twice or three times a day after meals.

As this tonic pill sometimes has a constipating effect, the bowels should be kept regular by taking, when necessary, two or four grains of cascara at night. Sufferers from poor circulation should wear woollen underclothes all the year round, varying the thickness with the season.

Plenty of fatty foods, bacon, suet puddings, butter, cream, cocoa, etc., should be included in the diet, for their heat-producing qualities lighten the



strain on the circulatory system in its efforts to keep the extremities supplied with warming blood. Half an hour's brisk walk twice a day, or five minutes' rope-skipping every morning, bare-foot, on a warm, thick rug, immediately on rising, will also help in strengthening and improving a circulation not naturally robust.

People with weak circulations usually only make matters worse by trying to "harden" themselves by taking cold baths. If the circulation is naturally vigorous, a cold bath often has a valuable stimulating effect. On the other hand, if the circulation is feeble, a cold bath only further depresses it. Much more sensible in these cases, therefore, is a hot (but not scalding) bath, followed by a momentary sponge-down with tap cold water at its conclusion.

**CIRCUMCISION.** The ancient Jewish rite of cutting away the foreskin, has everything to commend it from the standpoint of health and cleanliness.

Wherever in infancy the foreskin is notably long, completely covering the end of the organ, circumcision should be performed. The operation is a very minor one and can be performed by the doctor in the baby's home. If the foreskin is not thus removed the secretions of the glands on its inner surface become dried and foul, causing local irritation which may lead to bed-wetting and other bad habits.

In adult life the operation is not quite so simple on account of the abundant blood supply of the region. However, if there is the slightest difficulty in turning back the foreskin in the daily washing of the part which is an essential to good health circumcision should be performed. The patient need not lay up in bed for more than the few hours necessary to recover from the anæsthetic, the chief discomforts being from the bandages and dressings which have to be worn for about a week following the operation.

**CIRRHOISIS.** Whenever the special tissues of an organ such as the liver, kidney, or lung are, as a result of disease, replaced by ordinary fibrous tissue the condition is described as cirrhosis.

Cirrhosis of the kidney is a prominent symptom of the "small red kidney" of Bright's disease. (*See page 304.*) Cirrhosis of the liver is a common result of prolonged over-indulgence in alcohol or over-eating. (*See LIVER DISEASES.*)

**Symptoms.** The fibrous tissue which has replaced the portions of the normal glandular substance may contract down, thus narrowing the blood vessels. As a result the liquid, colourless part of the blood, the serum, may escape through the vessel walls, the surrounding tissues becoming, so to speak, waterlogged. This waterlogged condition in cirrhosis of the liver commonly takes the form of abdominal dropsy. Where the kidneys are chiefly affected the dropsy begins about the feet and ankles, extending up the leg. The treatment of cirrhosis of the kidneys is included in the treatment of chronic Bright's disease. (*See page 302.*)



**CIRRHOSIS OF LIVER.** Nausea in the mornings, diminished appetite, a sour taste in the mouth, and a pallor of the skin, together with a gradual loss of energy and perhaps loss of weight are the symptoms usually first noted in cirrhosis of the liver. As the disease advances the contracting down of the abnormal fibrous tissues in the liver (*see* CIRRHOSIS *above*) leads to the blood circulation in the organ being more or less obstructed. As a result the veins over the abdomen become engorged with blood and show through the skin as noticeable blue lines.

Fluid which has escaped from the overcharged veins now collects in the abdomen, setting up the marked abdominal dropsy which is such a constant symptom of the disease. The patient gets progressively weaker and often has great difficulty in breathing, through the pressure of the fluid in the abdomen pressing upwards against the diaphragm.

Far and away the commonest cause of cirrhosis of the liver is alcohol. After this comes syphilis, and, less frequently, overeating, particularly where the patient for years has been in the habit of "doing himself" particularly well.

**Treatment.** No treatment will bring a cirrhotic liver back to its normal healthy state, but much can be done to retard the advance of the disease. The first step is absolutely to give up alcohol in any shape or form, no matter whether the disease is caused by chronic alcoholism or not.

In the next place the diet must be reduced to the simplest and most easily digestible form. Milk, vegetables, custards, etc., should be prominent in the diet, while heavy meats and all rich, highly condimented foods should be avoided. Plenty of plain water or mineral water may be drunk both between meals and at meals. Meat should not be eaten more than once or at most twice a day, and then chicken, veal, sweetbreads, etc., should be chosen rather than mutton, beef, or pork, etc.

Constipation, even in the comparatively early stages, is often troublesome. A teaspoonful of the phosphate of soda taken before breakfast when necessary is usually all that is needed here. Sometimes the patients in advanced stages have bouts of sickness in which they bring up blood. Again, blood may be passed with the stools. As this may be taken as Nature's way of balancing the over engorgement of the system it should not be looked on as too serious a symptom.

Diarrhœa is often troublesome, but as much of the surplus fluid in the system is in this way got rid of it should not be checked unless excessive. In this latter case the following mixture is useful:

R					
	Carbonate of calcium	..	..	..	$\frac{1}{2}$ ounce
	Phosphate of calcium	..	..	..	$\frac{1}{2}$ ..
	Carbonate of bismuth	..	..	..	I ..

Mix thoroughly and take one teaspoonful every three hours, until diarrhœa is checked.

For the abdominal dropsy the only home treatment to be advised is cutting down the amount of liquids taken during the day. At the same time moderate doses of potassium iodide (ten to thirty grains) may be given three times a day. Where the dropsy is pronounced the physician may have recourse to tapping, that is inserting a hollow tube through the skin so that the fluid may drain off.

**CITRATES.** The iron, quinine, and ammonium citrates are commonly used in medicine both to reduce the temperature in slight fevers and to correct anæmia. A favourite "feverish cold mixture" is the following:

℞	Potassium citrate .. .. .	1 teaspoonful
	Solution of ammonium acetate .. ..	4 teaspoonsful
	Spirit of nitrous ether .. .. .	1 teaspoonful
	Syrup of lemon .. .. .	1 "
	Burnt sugar, a sufficient quantity	
	Chloroform water .. sufficient to make	16 tablespoonsful
Mix. Take four teaspoonsful every four hours during the first and second day of the cold.		

The following is a good example of the iron and quinine citrate compounds for cases of slight anæmia:

℞	Iron and quinine citrate .. .. .	1½ teaspoonsful
	Glycerin .. .. .	6 "
	Spirit of chloroform .. .. .	2 "
	Orange-flower water (triple) .. ..	4 "
	Chloroform water .. sufficient to make	16 tablespoonsful
Mix. Take one to two tablespoonsful three times a day after meals.		

**CITRIC ACID** is obtained from the juices of fruits such as the lemon. Citric acid in the proportion of about half a teaspoonful to the two table-spoonsful of water makes a solution about as strong as lemon juice. The dose of citric acid is five to twenty grains.

A weak solution of citric acid stimulates the pouring out of saliva in the mouth, and so is often useful in allaying thirst in fever cases.

Citric acid is also often used in the preparation of effervescing drinks as in the following favourite cooling draught. In a half tumbler of water dissolve twenty grains of citric acid. In another tumbler half full of water dissolve thirty grains of bicarbonate of potash. Pour the two half tumblers of liquid into one large tumbler, stir briskly, and drink while effervescing. This beverage may be sweetened to taste with sugar.

**CITRINE OINTMENT**, or mercuric nitrate ointment, is sometimes used for its germicidal properties in skin diseases caused by germs or fungi. Citrine ointment diluted with four times its bulk of soft yellow paraffin is occasionally prescribed as an ointment for clearing the heads of children of nits.

**CLARET** contains from 8 to 13% of alcohol, a bottle of average strength (10%) being therefore equal in content of alcohol to a quarter pint of proof

whisky. As sold in England it is sometimes "fortified" with spirit. It contains a moderate quantity of acid and very little sugar. Among the best growths of claret are Châteaux Lafite, Margaux, and Latour.

**CLAVICLE** is the collar-bone which runs from the shoulder to the top of the breast-bone. It is frequently fractured, a common accident among children as well as grown people.

The clavicle may also be dislocated at either extremity, more commonly at the shoulder. In this case and in fracture the shoulder falls a little and is drawn forward and inward.

**CLAVICLE, FRACTURE OF.** This accident can usually be readily diagnosed by running the finger along the course of the bone, when it will be found that its continuity is broken, one fragment usually being lifted up towards the surface, riding on top of the other. The whole shoulder appears flattened, the arm is held close to the side, and the patient usually supports the elbow of the injured arm in the palm of his other hand. To relieve the tension he frequently bends his head over towards the injured side.

To set a broken collar-bone, make out of cotton-wool a firm pad three inches thick at the top and about an inch thick at the lower end. Place this in the armpit on the injured side with the thick end up. Then with a three-inch-wide stout cotton bandage



FRACTURE OF THE COLLAR BONE, OR CLAVICLE

make one or two loops around the middle of the injured upper-arm so as to make the end of the bandage tight. Now pass the bandage around over the back, under the sound armpit, across the chest, over the arm on the injured side, and across the back again several times until the upper arm on the injured side is firmly bound to the chest.

The forearm on the injured side should now be brought forward and laid across the chest with the tips of the fingers on the front of the sound shoulder. The bandage should now be continued around the body and injured arm until this is firmly bound in position. A few of the turns of the bandage should pass under the elbow of the injured side and over the opposite shoulder so as to keep the arm on the injured side from sagging down.

Such a bandage should be firm but not too tight, and if the hand swells or much throbbing pain follows, the bandage must at once be taken off and put on again less tightly. The bandage can usually be removed with safety in three weeks' time. Care, however, must be used for some weeks later in moving the arm, particularly in raising it, so as not to tear apart the still somewhat weak point of union. If a surgeon is at hand to attend to the case, he may apply a more complicated splint or bandage than the above. The simple method of treatment described usually gives excellent results.

Sometimes it is difficult to diagnose a fractured collar-bone in a fat child, and it may go unnoticed for a time. If the child complains of pain on moving the arm, a doctor should be asked to examine him. Otherwise deformity may result. The part usually fractured is close to the middle of the collar-bone, but sometimes the outer end may be broken by a blow on the shoulder.

**CLAVUS** is the name given to a very painful form of neuralgic headache which sometimes occurs in hysteria. The sensation is said to resemble that of a nail being driven into the head.

Clavus also means a corn, or thickening of the skin.

**CLEFT PALATE.** A congenital deformity in which the roof of the mouth shows a cleft down the centre. The only treatment is an operation, which should be performed between the third and sixth months after birth. There is always difficulty in suckling, so that the longer the operation is delayed, the greater is the drain on the patient's vitality.

The operation, which must be done under an anæsthetic by a skilled surgeon, consists of paring off a flap of the soft tissues from side of the cleft, and sewing the free edge of this to the other side of the opening, so as to close in the roof of the mouth. The little patient usually has to be in hospital for ten days or a fortnight, as the utmost care must be taken by sterilising all food to prevent infection of the wound.

Excellent results are practically always obtained when the operation is skilfully carried out, though especial care must be taken when the child begins to learn to talk that it develops no unusual mannerisms in speech.

**CLERGYMAN'S THROAT** is a name given to a chronic or sub-acute inflammation of the tissues at the back of the throat or of the vocal chords.

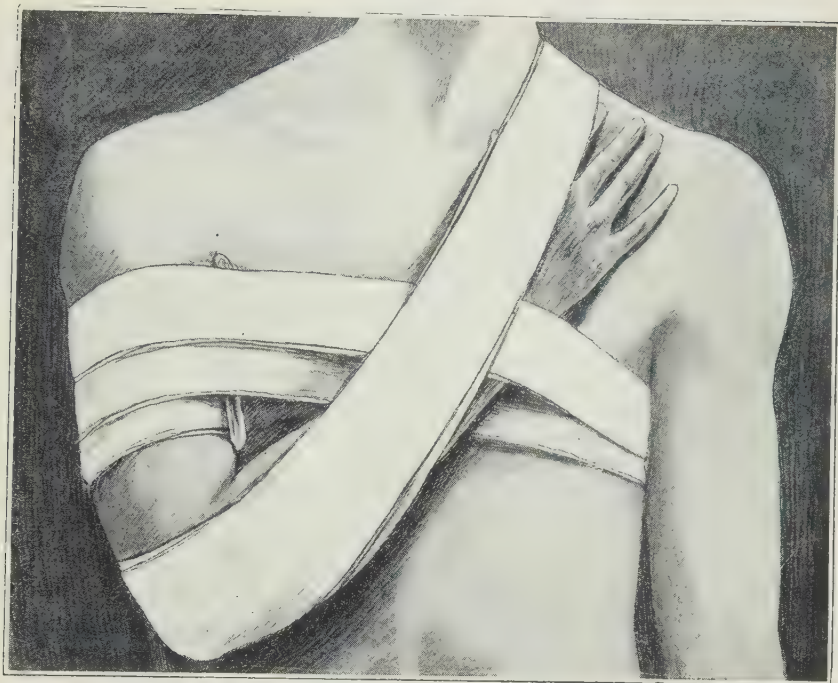
The voice is husky, or may even be reduced to a whisper.

Treatment consists of complete rest for the voice for some days, the patient never attempting to speak above a whisper. At the same time some gargle such as the following may be used four or five times a day :

R.					
Tincture of krameria	..	..	..	..	1 drachm
Tincture of myrrh	..	..	..	..	1 "
Compound tincture of lavender	..	..	..	..	15 minims
Glycerin of borax	..	..	..	..	4 drachms
Water	..	..	..	enough to make	6 ounces

Make into a gargle. Use as gargle several times a day.





HOW TO ARRANGE BANDAGES FOR A FRACTURED COLLAR BONE

**CLIMACTERIC.** *See* CHANGE OF LIFE.

**CLIMATE AND DISEASE.** No general rules can be laid down as to the varieties of climate which will best suit individuals suffering from particular diseases, because very frequently a number of organs are diseased, and the relative importance of these has to be closely considered in choosing the ideal climate for the sufferer.

As a general rule, mountainous regions where the air is dry and free from dust and germs are suitable for consumptives and others with weak lungs. On the other hand, if the heart is affected, the dangers of too great an altitude must not be forgotten. Dry, moderate climates where there is a minimum of cold, chilly winds are best for these latter cases as well as for those suffering from kidney trouble or chronic rheumatism.

The effect of the sea, whether in a cold, bracing climate or on a sunny southern shore, can only be determined by an experimental visit by the patient. On the one hand there is purity of air with a maximum of sunlight and oxygen, but these advantages have to be weighed against the greater dampness, and the stimulating effect which may be too wasteful of the patient's strength. Sea trips, while useful in the very early stages of consumption, or where the patient is simply convalescent from some wasting disease, should never be undertaken when the consumption is in an active state with profuse expectoration, night sweats, and fever.

**CLINICAL**, which signifies "relating to a bed," is a word loosely used in connection with disease. Thus we have "clinical course," meaning the symptoms and progress of a case of illness; clinical thermometer; clinical study, meaning study of disease in the manner usual at the bedside.

**CLONIC** is a term applied to short-lived muscular spasms or contractions as opposed to tonic or prolonged spasms. The knee-jerk, which is obtained on tapping just below the knee-cap, is a clonic spasm; the common cramp in the calf of the leg is a tonic muscle contraction.

**CLOTHING.** To make the best choice of clothing, from the point of view of health, some knowledge is necessary of the properties possessed by the various materials from which clothing is made. These are wool, cotton, linen and silk. They vary in their power to conduct heat and to absorb perspiration, and consequently in their warmth or coolness.

The human body manufactures an enormous quantity of heat—far more than suffices to keep it warm on the coldest day. This heat is being continually conducted away through the clothing to the outer air. Obviously, in cold weather we need to wear clothing of low conducting power so as to prevent excessive loss of body heat; in warm weather we generally need clothing that conducts away the body heat freely and at the same time absorbs perspiration.

For winter wear, therefore, we should choose wool or silk materials, as they are the poorest conductors; for summer wear cotton and linen, which are good conductors. But other considerations come in. Linen becomes quickly sodden with perspiration and chills the body, especially in the period of rest after active exercise. Wool, on the other hand, stores up moisture and gives it off gradually, in such a way that a sweat-sodden wool garment does not produce chilling of the skin.

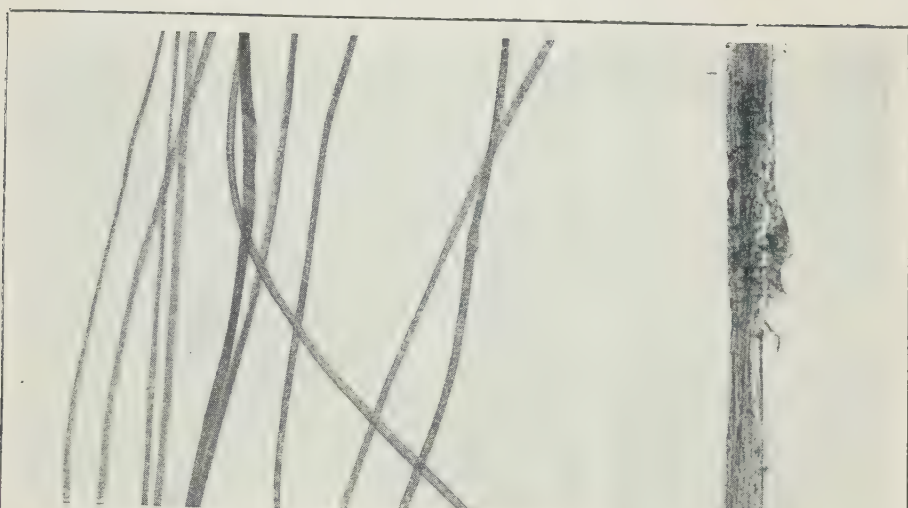
Then the manner of wearing greatly modifies the properties of garments. Close-woven material is much cooler than loose-woven material of the same kind. In the meshes of the loose-woven garment large quantities of air are imprisoned, and air is a very poor conductor of heat. Thus loose-woven linen may be warmer than close-woven cotton, although linen is cooler than cotton of the same texture and thickness. Again, two thin garments are warmer than one garment as thick as both combined, because between them lies a layer of stationary air.

From these facts we may draw the following conclusions:

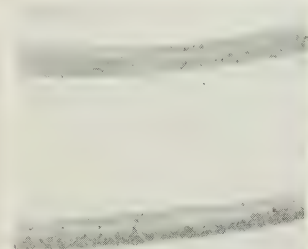
In cold weather, the most suitable underwear consists of two or more light or medium weight loose-woven wool or silk garments.

In moderately warm weather the best wear is just a sufficient quantity of loose-woven wool, or silk, or a mixture of both materials.

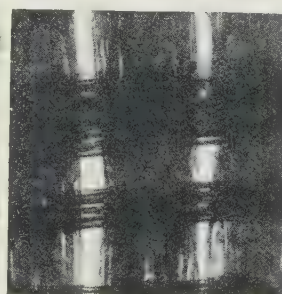
In hot weather loose-woven cotton or linen for the strong and healthy; very thin, fine wool, or silk, or silk and wool for those who are delicate, subject to chills, or who go through periods of active exercise.



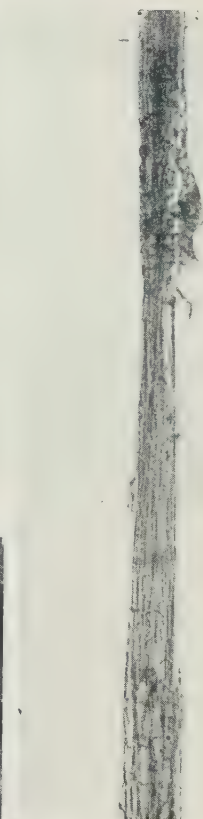
SILK FIBRES



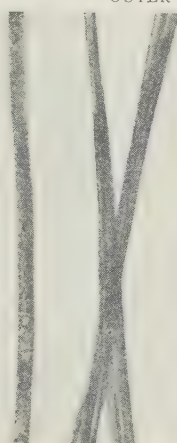
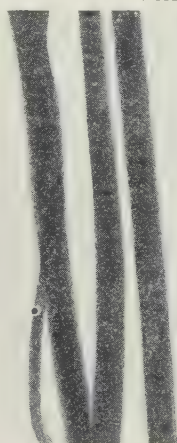
WOOL FIBRES SHOWING  
SERRATION



WOVEN SILK, MAGNIFIED 80  
TIMES



A WOOL FIBRE STRIPPED OF  
OUTER COVERING



WOOL TREATED WITH CHLORINE—SERRATIONS GONE ARTIFICIAL SILK, NITRO-CELLULOSE

TEXTILE FIBRES USED IN CLOTHING  
From microphotographs by Mr. H. Priestman.

Some people, probably most people, find wool very irritating to the skin. This irritation is often injurious, exercising a profound influence on the nervous system and producing skin eruptions. There are several ways of overcoming the difficulty. Very fine wool garments may be obtained which have little or no irritating effect ; or an undergarment of silk, or silk and wool mixture may be worn ; or a large-meshed cotton or linen garment may be worn next the skin. It is quite a fallacy to suppose that, for warmth, wool must be worn next the skin ; if woollen wear comes outside the cotton or linen garment, it is equally effective in preserving the warmth of the body.

Some garments frequently worn are exceedingly unhealthy, because they prevent the evaporation of sweat, and confine impure air and gases. Among these are chamois leather vests, rubber waterproof coats and furs. All these have their uses. Sitting in a motor car and facing a biting wind, one can put to excellent use a chamois vest that covers the chest, or an impervious fur coat. When travelling in a downpour of rain one is also more likely to escape evil consequences if protected by a waterproof coat. The waterproof coat is also useful when walking short distances on a wet day, and the chamois vest and furs when returning from a theatre on a cold night.

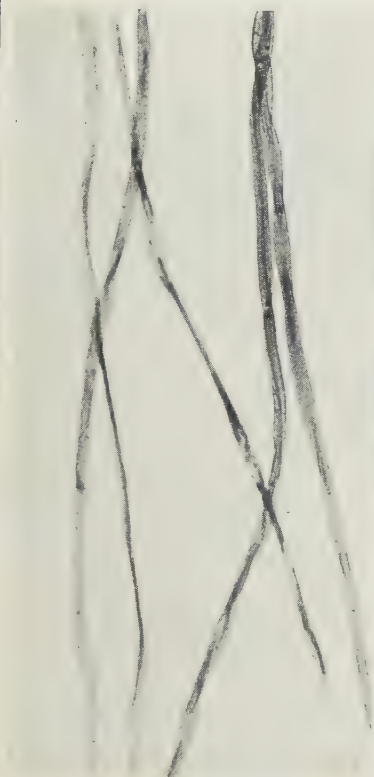
But when briskly walking long distances, cycling, or taking any other active exercise, the use of waterproofs and furs should be avoided. They may protect the body temporarily from cold and wet, but afterwards may be the cause of dangerous chills.

Covering the upper part of the body with furs, as women love to do, produces congestion of that part, and weakens the resistance of the lungs to chills. Chest-protectors, when they only partially cover the lungs, are injurious in the same way. Scarves, mufflers, and furs round the neck tend to congest the head with blood, and probably also cause indirectly more colds and sore throats than they prevent.

Clothing should be more or less equally distributed over the body and limbs. This hygienic rule is scarcely ever observed, and it is broken particularly by women, both as regards themselves and their children. A woman who wears far too much clothing over the greater part of the chest and the lower part of the body only very thinly clothes the upper region of the chest (a delicate part), the arms, the legs, and the feet. This is the source of lung and bronchial affections, chilblains, neuralgia, cold hands and feet, and loss of vital strength.

Women are gradually growing more sensible in this respect, but it cannot be urged too strongly that for the best health and the highest vigour of body, the upper part of the chest, the arms and the legs should be as warmly covered as the body. In winter and spring the undergarments should have long sleeves and high necks. For the protection of the lower limbs fewer petticoats are to be recommended, their places being taken by thick stockings and combinations (two, or three if necessary).





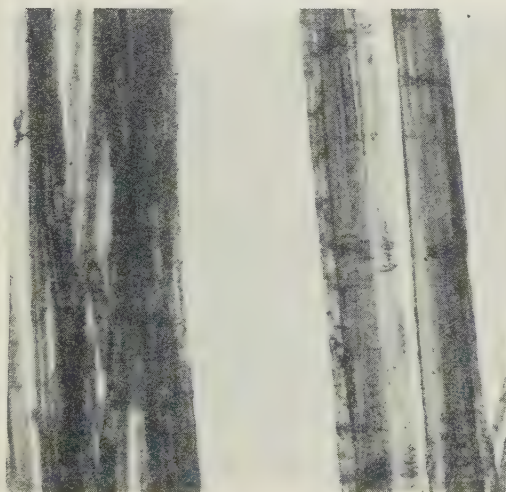
AMERICAN COTTON



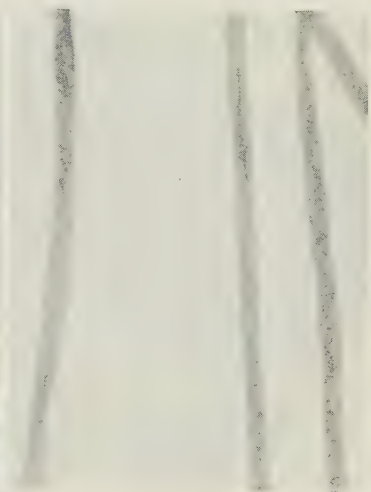
LINEN FIBRES



EGYPTIAN COTTON



FLAX FIBRES



MERCERISED COTTON

TEXTILE FIBRES USED IN CLOTHING

From microphotographs by Mr. H. Priestman.

As an article of clothing the impervious corset is open to the same objections as the chamois leather vest and the waterproof coat.

Clothing as, generally worn is too heavy, and often too tight-fitting. By selecting loose-woven material, one can secure lightness with warmth. Loose garments are warmer than tight clothes. Looseness and lightness of the clothes allow freedom of movement, and this is necessary for good health.

The colour of the outer clothing is a matter of some importance in very hot, sunny climates. The darker the material the more heat is allowed to pass into the body. Black, dark blue and dark brown clothes, for instance, allow about twice as much of the sun's heat to pass on to the body surface as white or light yellow clothes. Light-coloured clothes should, therefore, be chosen for hot sunny days.

For night wear some delicate or rheumatic people wear wool. This is rather irritating to the skin, and often interferes with the wearer's sleep and rest. Probably in most such cases it would be better to wear very loose-woven cotton night-clothing, or cellular linen or silk. For the great majority of people cotton or linen is the best material for night wear. The body does not perspire as in the day time ; there is not the same risk of chills, and sleep is more restful in non-irritating linen or cotton than in irritating wool.

Both outer and inner clothing should be hung up at night in such a way that it will get well aired. Some care also should be taken to preserve the underclothing from contamination. Undergarments which are to be worn next the skin should not come in contact with the outer clothes which are laden with dust, dirt, and microbes ; they should never be placed on chairs, or other articles of furniture, which are frequently quite as dirty as the outer clothes.

**CLOTTING** or coagulation is the process in which body-fluids, such as the blood, become converted into solids. Blood clots when shed, or when brought into contact with a foreign body. It is this clotting that stops the bleeding of a wound.



**MAGNIFIED BLOOD CLOT**  
Showing network of fibrin which entangles blood corpuscles and produces clotting.

When people bleed freely, as in the case of "bleeders," the blood is deficient in the fibrin-ferment, which brings about clotting. Certain substances, such as citric acid, interfere with the clotting process. Others, such as calcium, favour it. Hence calcium chloride is now sometimes used to increase the clotting tendency of the blood in "bleeders."

Lymph and chyle also clot in the same way as blood, but not so firmly. Serous effusions in the pericardium (the membrane surrounding the heart), in the pleura, in the peritoneum, etc., may coagulate or not according to their composition.

Milk is clotted immediately it enters the stomach by the ferment rennet there present. Cow's milk clots in larger and firmer masses than either human or asses' milk, and is therefore less digestible.

The fluids in the muscles clot some time after death, producing the stiffening called rigor mortis.

**CLOVES** are the dried buds of an eastern plant. Their most important constituent is the oil of cloves which is much used in medicine, dose  $\frac{1}{2}$  to 3 minims.

Applied outwardly, oil of cloves has an irritant stimulant effect on the skin, causing the blood vessels to dilate, and therefore having a heating, reddening effect.

Taken internally, oil of cloves causes an increased flow of saliva in the mouth. In the stomach the normal movements are stimulated, and there is an increased flow of gastric juice. Because of these characteristics, oil of cloves increases the appetite. It therefore is often included in medicines aiming to improve the digestion. As it has a carminative effect, helping in the expelling of accumulation of gas in the intestine, it is often prescribed in cases of indigestion with flatulency. Because oil of cloves has a stimulating effect on the muscles in the walls of the intestine, preventing irregular and painful colicky contraction, it is often included in purgative pills, which otherwise might induce griping.

**CLUB-FOOT OR TALIPES** is a permanent malformation of the foot or ankle, which prevents the sole from lying flat on the ground when the patient stands on the feet.

Four varieties are described.

(1) **TALIPES EQUINUS**. Here the heel does not reach to the ground, the patient's weight falling on the ball of the foot.

(2) **TALIPES CALCANEUS**, the opposite condition in which the heel alone touches the ground, the toes and the front part of the foot being lifted upward.

(3) **TALIPES VALGUS** and (4) **TALIPES VARUS**, in which respectively the outer and inner sides of the foot are turned upwards, so that the patient walks on the inner or outer side of the foot.



CLOVE BUDS AND FLOWERS

Hinks

The deformity may be present at birth, or may be the result of accident or disease in later life. Paralysis, or the contraction of scar tissue (*see* CICATRIX) after an injury, are the commonest causes of club foot.

**Treatment.** In congenital club-foot in an infant, the soft bones of the

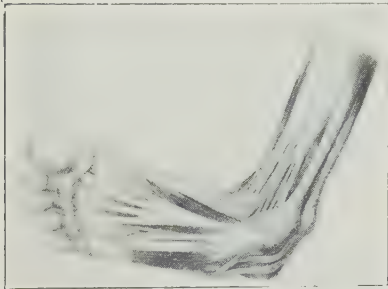


DIAGRAM OF MUSCLES IN CLUB-FOOT  
(TALIPES VALGUS)

From a drawing at Guy's Hospital.

foot can be readily forced back into normal position with the sole of the foot at right angles to the line of the leg. A splint should be applied to hold the foot in this position, and this should be put on in the morning and worn for two or three hours, then removed, and put on again in the afternoon, to be worn for an equal length of time.

In the intervals the foot should be pressed back into its normal position by the mother half a dozen times a day.

All the muscles of the lower leg should be strengthened by the mother's exercising them for ten minutes three times a day. This may be done either by massage, gentle rubbing and pinching the muscles of the calf of the leg, or by slowly bending the foot on the ankle, first in one direction, and then in another, but chiefly in the direction which corrects or over-corrects the deformity.

Where the club-foot is the result of infantile paralysis of certain muscles of the leg leaving them powerless, so that the unaffected muscles pull the foot out of shape, massage and electric treatment skilfully applied by the attending physician may to a great extent remove the deformity. Where the foot is pulled out of shape by spasmodic contractions of certain muscles, or by the contraction of scar tissue resulting from a deep burn or other accident, a surgical operation to divide certain of the tendons may have to be performed. After such an operation the foot must be held in position for weeks by a splint, and when this is removed the whole group of muscles which hold the foot in position must be re-developed by suitable exercise and massage, along the lines laid down by the surgeon in attendance.

In slight congenital clubfoot, taken in hand at once, a perfect cure can nearly always be obtained. When the condition is neglected, however, or



A SEVERE FORM OF CLUB-FOOT

Drawing and diagram showing muscle arrangement.  
From Guy's Hospital.



where there is marked paralysis of muscles, a complete cure is not always possible.

**CLYSTER** is an old name for an enema.

**COAGULATION** is the more scientific name for clotting. (*See* CLOTTING.)

**COAL GAS POISONING.** Many deaths are reported every year from suffocation, accidental or suicidal, by the breathing in of ordinary illuminating gas. Besides these serious cases, vague illnesses, slight headaches, mental depression, and anæmia often result where a person for hours and days breathes in even tiny quantities of coal gas escaping into the atmosphere of the room.

**Symptoms.** Drowsiness varying from a slight degree up to the deepest unconsciousness, with a bluish purpling of the complexion, stertorous breathing with puffing out of the lips at each expiration, and perhaps frothing about the mouth are the prominent symptoms.

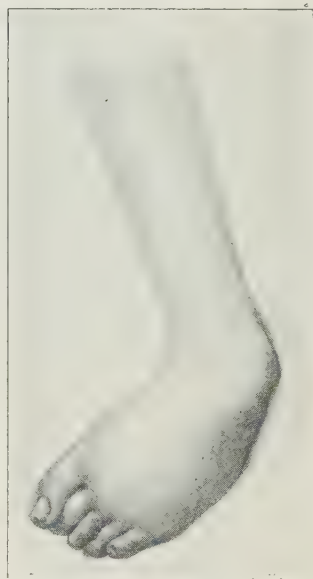
**Treatment.** The first step is to lay the patient flat on his back on a bed in a well-ventilated room. While waiting the doctor's arrival, artificial respiration may be carried out in the manner described on page 139 and under CHOKING, *page* 398. No attempt should be made to give drugs by the mouth, but the doctor on his arrival may give a hypodermic injection of a fifteenth of a grain of strychnine sulphate to stimulate the flagging heart.

If much of the gas has been inhaled, the outlook is always poor, the unconsciousness and lividity too often only becoming deeper until death ensues.

In favourable cases the patient soon begins to show signs of coming to, the purplish-blue lips gradually assume a more normal colour, and the breathing becomes more regular and deeper.

A most important point to remember is that *even after apparent complete recovery*, the patient should remain lying down in bed for at least forty-eight hours. Instances of gas poisoning victims falling dead when walking out of the hospital where they have been successfully "brought round," show that after even partial gas poisoning heart failure is always to be feared.

**COALMINER'S DISEASE.** Through inhaling constantly the gritty dust which fills the air in the coal shafts, coalminers sometimes suffer from a peculiar fibrous degeneration of the lungs which has been given this name.



CLUB-FOOT (TALIPES VARUS)  
From a drawing at Guy's Hospital.

The only treatment is removal to a purer atmosphere. The disease is not markedly fatal, persisting perhaps unknown to the patient for many years.

**COCA** is prepared from the dried leaves of the South American coca-tree. Its chief ingredient is the alkaloid cocaine.

**COCAINE**, an alkaloid obtained from coca leaves, is much used in medicine, chiefly as a local anæsthetic. A 2 per cent. solution of cocaine and distilled water dropped in the eye will relieve the pain and smarting from grits or cinders under the lids. Ointments containing cocaine are commonly used where mucous surfaces are painful or itch, as, for example, in hæmorrhoids. Cocaine is sometimes injected by dentists into the gums about a decayed tooth, so that its pain-killing qualities may do away with the necessity for taking gas. This practice, however, is by no means always a safe one.

Cocaine is a most dangerous drug because of the great risk the user runs of developing an irresistible cocaine habit. (See DRUG HABITS.) Particularly dangerous are "cold-in-the-head" powders which often contain large quantities of this powerful drug.

On absorption through the mucous membrane of the nose the drug has a generally stimulating effect, throwing off the dull discomfort and achy feelings so pronounced in the first stages of a cold in the head, while at the same time the "stiffness" of the nostrils is removed. It should, however, be borne in mind that these results are only temporary, the cold is not really cured, and any continuation of the treatment will only lead to great mental depression, loss of self-control, general nervous breakdown, and too often the acquirement of an irresistible drug habit.



THE COCCYX, THE PRIMITIVE  
HUMAN TAIL

**COCCYX**. The lower end of the spinal column, a bone composed of the last four vertebræ welded together. It is the remains of the tail of our remote ancestors, but in man lies buried under the surface. Occasionally as an abnormality it projects more or less.

**COCOA** is prepared from the seeds of a tropical plant. The well-known invigorating effect obtained from a cup of cocoa comes from its contained theobromine. Its chief food value is contained in the natural fat of the bean.

Cocoa differs from tea and coffee in that it is not only a valuable stimulant and "pick-me-up," but is also a real heat-producing food. Drunk with plenty of milk and sugar it is, therefore, a much better winter breakfast beverage than either tea or coffee. (See also CHOCOLATE.)

**CODEINE** is an alkaloid obtained from the opium poppy. The doses are : Codeine,  $\frac{1}{4}$  to 2 grains ; codeine phosphate,  $\frac{1}{4}$  to 2 grains ; and syrup of

codeine,  $\frac{1}{2}$  to 2 fluid drachms. Codeine is sometimes prescribed in consumption or phthisis to quiet a troublesome, hacking cough. In diabetes it is also used to lessen the amount of sugar in the urine.

**COD-LIVER OIL** is prepared by pressing out from the livers of codfish their contained oil.

Cod-liver oil, either in its natural purified state, or else in the form of an emulsion, is a most valuable nutritive tonic for invalids in general, and for consumptives and rickety children in particular. People of a hysterical, over-nervous temperament are often greatly benefited by a six weeks' course, once or twice a year, of one of the many easily digestible emulsions of cod-liver oil on the market. Mixtures of cod-liver oil with iron or malt are also much used in general debility, and for children developing tubercular glands in the neck.

The dose of cod-liver oil is from a teaspoonful to a tablespoonful three times a day after meals, if the patient can digest it.

A simple method of preparing cod-liver oil is as follows. Get two fresh cods' livers, wash them, cut them up into inch cubes, pound them well in an open glazed basin, and place the resulting jammy mixture in a glass jar. Put the jar in a saucepan of boiling water, and allow it to boil for two hours. Drain the oil out of the liver, straining through a piece of fine muslin, place in bottles, cork well, and the oil is then ready for use.

To make an emulsion of cod-liver oil beat together in a large glazed bowl the yolks of two new-laid eggs, eight tablespoonsful of powdered castor sugar, two drops of the essential oil of almonds, and four tablespoonsful of orange-flower water. Mix thoroughly, and then add about eight ounces of the pure cod-liver oil. Mix thoroughly again, place in an airtight glass jar, and keep



THE PREPARATION OF COCAINE Boyer  
Photographed in the laboratories of the Central Pharmacy  
of France.

in a cool place. The dose of the above emulsion is from a dessertspoonful to two tablespoonful (varying with the patient's age) three times a day immediately after meals.

Cod-liver oil is also often prescribed with iron, as in the following useful tonic mixture, for a rundown, thin child :

R

Cod-liver oil	..	..	..	..	2 ounces
Syrup of ferrous phosphate	..	..	..	..	1 ounce
Oil of cassia	..	..	..	..	10 minims
Mucilage of gum acacia	..	enough to make			4 ounces

Make into a mixture. Give one to two teaspoonsful three times a day, after meals.

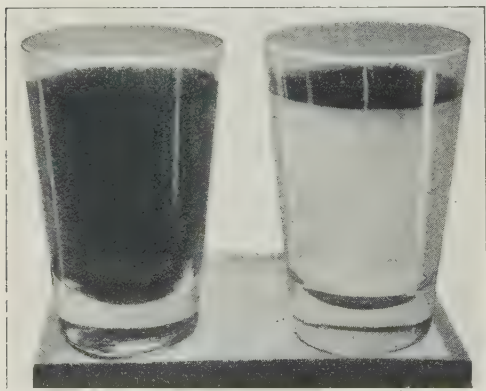
Mixtures of cod-liver oil, malt, and iron such as the following are also useful tonics to be taken during the convalescence after any severe and lowering illness. A useful mixture of this sort is :

R

Cod-liver oil	..	..	..	..	..	1 ounce
Extract of malt	..	..	..	..	..	1 "
Compound syrup of iron phosphate	..	..	..	..	..	1 "

Mix well. Dose for a child six to ten years, half to one teaspoonful three times a day after meals.

**COFFEE** is prepared from the ground seeds of the coffee plant. Its chief ingredients are caffeine, tannic acid, and the oils which supply the well-known fragrance.



A ROUGH TEST FOR COFFEE

If a little coffee be placed in a glass of water, pure coffee floats while its adulterations sink and colour the water.

Coffee contains almost as much caffeine as tea, but less than half as much tannic acid. Coffee, while a valuable pick-me-up on account of the stimulating effect the contained caffeine has on the brain, the heart and the kidneys, contains no fats or other really nourishing qualities, hence, strictly speaking, it is not a food at all.

Coffee delays digestion to a slight extent when taken with meals. It therefore should not be a staple drink with any but those who enjoy the most vigorous digestive powers.

Because of its stimulating and exciting effect on the brain, many people cannot drink coffee at night, the resulting over-activity of the mind keeping them awake for hours after they go to bed.





HENNINGSVAER COD-LIVER OIL FACTORY, LOFOTEN, NORWAY Allen & Hanbury



RECEIVING FISH AT A WAREHOUSE AT AALESUND, NORWAY Underwood

TWO CENTRES OF THE NORWEGIAN COD-LIVER OIL INDUSTRY

**COLCHICUM** is chiefly used in medicine for its pain-killing powers in gout. Ten to fifteen drops of the wine of colchicum may be taken three times a day immediately after food at the height of an attack, if the patient's heart is healthy and diarrhœa is not brought on.

**Colchicine** the active principle of colchicum, may also be given at the height of the attack in doses of a hundredth to an eightieth of a grain three times a day after meals. Besides relieving the pain, colchicum hastens the recovery from the attack and lessens the inflammation. A very dangerous drug, it never should be used except when prescribed by the physician, who, in ordering it, takes into full consideration the condition of the patient's heart and general health.

**COLD, Uses of as a Remedy.** The application of cold is of great value in stopping bleeding, reducing high temperature in fevers, abating pain, and reducing inflammation.

For headache, cloths wrung out of very cold water and applied to the forehead are sometimes effective. Or the forehead may be bathed with vinegar and cold water. An ice-bag to the head is even more effectual. This measure is particularly useful in delirium, and in the intense headaches of fevers.

For the early treatment of sprains nothing is better than the application of cold by means of an evaporating lotion.\* This may be composed of equal parts of water and spirits of wine, or a cheaper lotion can be made of water and methylated spirit. The following is a good cooling lotion :

R

Sal ammoniac	..	..	..	..	..	$\frac{1}{2}$	ounce
Spirits of wine	..	..	..	..	..	I	..
Vinegar	..	..	..	..	..	$1\frac{1}{2}$	ounces
Water	...	..	..	enough to make	10	..	..

Any of these lotions are applied by saturating a single layer of lint, and placing it on the part. The lint should be kept moist by hanging a vessel containing the lotion over it, and placing a few strands of cotton in the liquid, with the ends hanging out over the edge of the vessel so that the lotion drips continuously on the lint. No covering of any kind should be placed on the lint, as the object aimed at is rapid evaporation. Unless the lint can be kept continually wet and cold no good will result; indeed, harm may be done. Cold applications to sprains are useful only in the earlier stages.

To relieve the pain of pleurisy an ice-bag is frequently applied to the chest. In internal bleeding, as in the stomach, ice sucked or swallowed in small pieces is of some service. Ice, or a cloth wrung out of very cold water, is a useful application to a black-eye, or to any bruise in the early stages.

In meningitis, cold applied to the head helps to relieve the pain. An ice-cap may be used, or "Leiter's tubes," which consist of a coil of tubing in which cold water from a tap circulates, may be applied.

In fevers, cold or tepid sponging, a tepid or cool bath, and the wet pack (a wetted sheet wrapped round the patient) are measures of great value for reducing the temperature. They are of especial service in typhoid fever.

**COLD CREAM**, a favourite toilet table requisite, is used for softening and cooling the skin after sunburn, as a cleansing cream, to relieve roughness and harshness of the skin, etc.

A prescription for cold cream is ·

R

Oil of rose .. ..	8 minims
White beeswax .. ..	1½ ounces
Spermaceti .. ..	1½ "
Rosewater, undiluted	7 fluid ounces
Almond oil .. ..	9 ounces

Numberless preparations based on formulæ more or less closely resembling the above are sold as "cold cream."

**COLD FEET** are a cause of many minor health troubles, especially to women and children.

The obstruction of the circulation of blood which occurs is a favouring cause of chilblains and varicose veins. Irritability of the nerves is produced, and this may give rise to headache, indigestion, and other disorders. To girls at the approach of puberty, from the thirteenth to the sixteenth year, cold feet are a serious danger. As a remedy thick woollen stockings and roomy boots (not low shoes) should be worn in winter. A pair of fibre or loofah socks in the boots is an excellent preventive of cold feet.

No one should go to bed with cold feet. Warming them at the fire is condemned by some physicians, but probably the risk (of over-relaxing the blood-vessels of the skin) is exaggerated. Exercise, of course, is a better method of inducing warmth, and it has more lasting effects. An old-fashioned, yet often very efficacious, plan is to dip the feet for one or two seconds in cold water, and then rub them briskly with a warm towel.

People subject to coldness of the feet should warm the stockings and boots before putting them on. A tendency to constant coldness of the feet always indicates the need for plenty of fat in the food, or for the use of cod-liver oil.



COLCHICUM, OR MEADOW SAFFRON

A specific in gout.

If the appetite is poor, bitter tonics, such as infusion of gentian and tincture of nux vomica will prove useful, by giving a willingness to eat plentifully of heat-forming foods.

A useful mixture here is :

R̄

Tincture of nux vomica .. .. .	1½ drachms
Sodium bicarbonate .. .. .	4 "
Compound infusion of gentian enough to make	8 ounces

Make into a mixture. Take one tablespoonful three times a day, twenty minutes before meals.

If the sluggishness of the circulation leading to the coldness of the feet is due to anæmia and chronic constipation, some bracing iron tonic pill such as the following may be indicated :

R̄

Exsiccated ferrous sulphate .. .. .	3 drachms
Extract of nux vomica .. .. .	15 grains
Arsenious acid .. .. .	1 grain
Compound rhubarb pill .. .. .	1 drachm

Make into sixty pills. Dose for a grown person : One pill three times a day after meals.

**COLD PACK.** This may be given in the following way. Cover the bed with a waterproof sheet, and over this lay one or two blankets. Wring a sheet out in cold water (of a temperature of 60 degrees) and wrap it round the stripped patient, quickly folding it around each leg separately and leaving the arms free. Over this wind a dry sheet, and then cover the patient with a blanket. The pack may be repeated in ten or fifteen minutes.

A cold pack of this sort sometimes has a valuable quieting effect in highly nervous states, and in heat-stroke.

**COLDS AND COLD-IN-THE-HEAD.** "Catching cold" does not, as its name implies, have anything to do with actual cold (that is, low temperature), except in occasional instances.

What is commonly called a cold is, in fact, an infectious fever, just as much as diphtheria is an infectious fever, and, like diphtheria, it is caused by microbes. A striking point of difference between the two ailments, however, is that whereas diphtheria is always caused by one special bacillus, a common cold may be set up by any one of a half-dozen or more entirely distinct germs.

Quite separate from the common cold are a number of conditions which are often confused with it. For example, hay-fever, the catarrh set up by continued irritation by tobacco or alcohol, the nasal catarrh which is an early symptom in measles, and the sudden swelling up of the lining membrane of the nose which sometimes occurs in certain individuals from nervous stimuli reaching the nose, must not be confounded with the ordinary "cold" which so often spreads throughout a house or whole office.



The common cold attacks people of all ages, and the residents of all climes. Colds are as frequent in the warm weather as in the cold; they are, in fact, more common in the milder spring and autumn weather than in mid-winter.

That colds are not caused simply by exposure to a lowering of the outside temperature is proven by the fact that infants and old people (who suffer most in other ways from such exposure) are much less apt to "catch cold" than are people between those age extremes.

The experiences of workers in observatories high up on mountain-sides, and continuously surrounded by fog and damp clouds, show that such atmospheric conditions do not directly lead to catching cold.

The most striking evidence that exposure to the outdoor elements does not necessarily of itself lead to catching colds is given by consumptive patients in outdoor sanatoria. Cold-catching is rare among these patients, although most of them are of very low resistance and many are extremely feeble, and all are exposed to all varieties of weather and temperature.

That the common cold is an infectious fever is shown by the fact that, like most other fevers, it begins suddenly and runs its stated course, and then gradually subsides. That it is very infectious, anyone who has noted how a cold will often attack one member after another of a family in succession will readily believe. Another strong proof that colds really are "caught," just as diphtheria is "caught," is that members of returning polar expeditions who have been perfectly free from colds when living for days together in temperatures below zero promptly contract colds as soon as they return to warmer climates, and begin once more to associate with their fellows.

**Causes.** The actual cause is always a bacillus, or group of germs, which settles on the lining membrane of the nose or throat, and finds it in a more or less susceptible state.

Predisposing causes are the conditions which lower the vitality and natural immunity of the body in general, and the lining membranes of the nose and throat in particular, so that should the germs of the disease be breathed into the nose and throat they will find the soil more than normally suitable for their own development and multiplication.

One of the chief predisposing causes of catching cold is the hereditary tendency thereto which exists in certain families. This may take the form of an abnormal sensitiveness of the lining membrane of the nose (something resembling that found in hay-fever patients), or the nose itself may be badly formed, rendering breathing difficult and leading to a lowered vitality locally.

Anything which temporarily lowers the individual's general vitality, such as prolonged hunger, melancholia, over-fatigue, living in ill-ventilated, overheated, and dusty rooms, undoubtedly predisposes towards catching cold. Because prolonged exposure to severe cold or dampness tends to lower the general resistance, it may also be looked upon as a predisposing cause. Any

wasting disease, such as consumption, Bright's disease, gout, etc., by lowering the general vitality, increases the individual's chances of catching cold. Over-indulgence in tobacco and alcoholic beverages act in the same way.

**Prevention.** The person who is continuously catching cold after cold, instead of simply relying on local measures to treat each cold as it develops, should be gone over thoroughly by a physician, to see if the actual predisposing cause cannot be discovered and removed. Frequently there is some abnormality in the nose itself which leaves it particularly open to germ attack. Again, there may be something in the patient's habits of life (he may be a mouth-breather or may indulge in tobacco or alcohol, etc., to excess) which should be put right. Perhaps he sleeps with his bedroom windows tight closed, under the mistaken but very prevalent idea that the night air causes colds.

The healthy action of the skin should be maintained by daily outdoor exercise and a warm or hot bath every morning. Warm or even hot baths, by their cleansing and stimulating action on the skin, probably harden a patient more against catarrh (particularly if followed by a brisk rub down, a cold douche, or some physical exercises) than jumping in and out, uncleansed, from a cold tub (Sir St. Clair Thomson).

How to dress is a very important problem for the individual given to catching cold. The first thing to remember is that, whether for grown person or child, too many clothes are just as likely to cause catching cold as are too few. It is most important to regulate the amount of one's clothing to one's occupation. For example, if one is sitting still for an hour watching a football match on a November day, it would be almost impossible to dress too warmly. On the other hand, if doing a brisk two-mile walk on the same day, a light summer suit and no overcoat at all would be the sensible outer covering.

What to wear next the skin is still a debatable problem, even among doctors. Wool in some form or flannel has a time-honoured reputation, because it is a poor conductor of heat, and so prevents the body warmth from escaping too rapidly when its surroundings are of a much lower temperature. The great objection to wool, unless loosely woven, is that it does not absorb perspiration. The perspiration which is constantly being poured out on the skin (whether we feel it or not) is therefore left as a sort of a wet film on its surface, preventing the skin from "breathing" as it should under normal conditions.

Linen, cotton and silk have not this disadvantage; the great fault with these materials for underwear is that unless specially knitted in wide mesh they are too efficient conductors of heat, and therefore apt to feel cold to the skin. Linen mesh undergarments—because they are highly absorbent (that is, they lift the perspiration away from the skin), and because the air-spaces formed by the mesh make them poor conductors of heat—are perhaps the safest and most satisfactory underwear, particularly for those who are predisposed to catching colds.

Care should be taken that the living-room is not overheated. The best means of heating is undoubtedly the open fire, because it does not devitalise the air, nor does it render the air abnormally dry. It is the abnormal dryness of the atmosphere in overheated, ill-ventilated living-rooms which evaporates the natural moisture on the lining membrane of the nose, leaving it in an over-sensitive state little likely to resist the attacks of any invading germs.

Most important of all, the person given to catching cold should take the greatest pains to avoid coming in contact with anyone suffering from a cold. If, when any member of a household develops signs of an oncoming cold, he were promptly quarantined and kept in his bedroom for two days, the rest of the family would probably escape the infection instead of, as is now almost invariably the case, contracting, one after another, the fever introduced into the house by the original victim.

**Treatment.** The best treatment of all is two days' complete rest in bed. It is no use attempting to prevent the development of the early stuffiness of and late discharge from the nostrils. They are simply Nature's methods of trying to protect the system from the invading germs, and will pass off in due time, but can rarely by any known means be abruptly stopped. Before going to bed the patient (adult) may be given two or three grains of calomel, and should take a hot bath or a hot foot-bath, to which a tablespoonful of mustard has been added. He should then at once be put in a thoroughly warm bed between blankets, the sheets having been taken off. He may have a hot water bottle at his feet and a loose warm shawl about his neck and shoulders to keep off all draught, and then as many of the windows in the room should be opened as is possible without setting up a direct draught. The windows should be left open *day and night*.

The patient, who is usually thirsty, may drink plentifully of hot milk, tea, or hot lemonade, and just before time to go to sleep, some doctors advise a stiff hot whisky and lemon. Hot drinks of this sort are of value because they help the skin and the kidneys in their duties of throwing off poisonous matters which tend to accumulate in the blood. If the patient is slightly headachy and feverish he may be given ten grains of aspirin. If he is very restless and the headache severe, the following prescription may be useful:

R

Phenacetin ..	..	..	..	..	..	10 grains
Caffeine citrate	..	..	..	..	..	5 "

Mix and make into two powders. Take one powder at bedtime, and repeat in two hours' time.

On waking next morning the patient should be given a teaspoonful of magnesium sulphate in half a wineglassful of water or some similar salts. There is usually no need for any medicines at this stage. The diet should be light and easily digestible, but if the bowels are kept regular it need not be restricted to fluids only. If the nose is still uncomfortably stuffed up, the

following prescription may be useful in encouraging the flow of mucus which is the first step towards a cure (Sir St. Clair Thomson) :

℞

Wine of antimony..	..	..	..	..	40 minims
Wine of ipecacuanha ..	..	..	..	..	40 "
Spirit of nitrous ether ..	..	..	..	..	2 drachms
Solution of ammonium acetate ..	..	..	..	..	1 ounce
Syrup of lemon ..	..	..	..	..	4 drachms
Almond mixture ..	..	..	enough to make	..	4 ounces

Make into a mixture. One tablespoonful every four hours, until secretion is free.

In the later stages when the secretion is free, perhaps on the third or fourth day, an expectorant mixture such as the following may be useful (Sir St. Clair Thomson) :

℞

Potassium citrate ..	..	..	..	..	1½ drachms
Solution of ammonium acetate ..	..	..	..	..	1½ ounces
Tincture of squills..	..	..	..	..	72 minims
Wine of ipecacuanha ..	..	..	..	..	1 drachm
Anise water ..	..	..	..	to make	6 ounces

Take one tablespoonful three times a day.

Sometimes by a brisk treatment *at the very start* of the cold its further development may be prevented. A common cold-cure pill, which sometimes is effective here, is the following :

℞

Extract of belladonna ..	..	..	..	..	1 grain
Camphor ..	..	..	..	..	2 grains
Sulphate of quinine ..	..	..	..	..	3 "

Mix, and make into six pills. Take one pill every two hours.

At bedtime the hot foot-bath may be given and the calomel taken as above, and in addition the patient may be given five grains of Dover's powder with his hot whisky and lemon. This treatment, together with the effect of sleeping between blankets, will probably bring on a profuse perspiration some time during the night, and care should be taken that the bed-covers are not thrown aside and a further chill contracted. Sometimes this treatment is so effectual that on the second morning all traces of the cold will have disappeared.

Other common remedies for preventing an oncoming cold are cinnamon and ammoniated tincture of quinine. The cinnamon is recommended (Parker) only in the earliest stages of the cold in the following doses : Two tablets of five grains each every half-hour for two hours, then every three hours for twelve hours, and finally one tablet every four hours until all traces of the cold have disappeared. The ammoniated tincture of quinine is also effective only in the very earliest stages of the cold, when it may be taken in teaspoonful doses in half a wineglass of water every hour for four doses.

Frequently after a cold, although it may have been only of a few days' duration, the patient is considerably run-down. In these cases a mixture such as that given on page 440 may be taken with advantage for a fortnight or so :





THE DOCTOR MAKING HIS ROUND OF A CLINICAL WARD



GENERAL WARD AND CRECHE



OPERATING ROOM



RECEIVING PATIENTS

THE ST. JOHN'S SEASIDE HOSPITAL, NEW YORK

℞  
 Strychnine phosphate .. .. . 2 grains  
 Syrup of iron phosphate .. .. . 6 ounces  
 Water .. .. . enough to make 12 "  
 Make into a mixture. Take two teaspoonsful in a little water three times  
 a day after meals.

**COLIC.** Severe griping pains over the centre of the abdomen with flatulence, distention of the abdomen and either constipation or diarrhoea, are the prominent symptoms.

The chief causes are neglect of keeping the bowels regular, the eating of over-ripe or unripe fruits, or a chill. Acute indigestion from any source may be accompanied by colicky pains.

**Treatment in Grown People.** Whether there is constipation or diarrhoea, a large dose of oil, from one to two tablespoonsful, should be given to clear out the overladen upper part of the large intestine. To check the pain, ten to fifteen drops of tincture of opium may be mixed with the oil. Locally a hot-water bottle applied to the abdomen while the patient lies on his side in bed is helpful in getting rid of the flatulency and relieves the pain.

The diet should be entirely milky until the attack has subsided, and afterwards the total amount of food taken should be reduced and all indigestible articles as well as coarse vegetables such as cabbage and celery, etc., should be forbidden.

When flatulency is a prominent symptom the following mixture is often useful :

℞  
 Tincture of belladonna .. .. . 30 minims  
 " " ginger .. .. . 1 drachm  
 Aromatic spirits of ammonia .. .. . 2 drachms  
 Spirits of chloroform .. .. . 2 "  
 Cinnamon water .. .. . enough to make 6 ounces  
 Make into a mixture. Take one-sixth part three times a day.

Where the colic is due to the accumulation of waste matters in the large intestine, sometimes the only treatment needed is the clearing of the lower bowel with an enema. A useful and efficacious enema here, which will also reduce the tendency to flatulency, is a pint of soapy water to which has been added one tablespoonful of spirits of turpentine. This solution should be injected into the rectum while the patient lies on one side with the buttocks raised on a pillow. (*See ENEMATA.*)

After the bowel has been cleared in the above manner the pain may still be very troublesome. Here a starch and opium enema may give relief.

Four ounces of thin starch paste, to which has been added twenty minims of tincture of opium, may be gently injected into the rectum.

**COLIC IN INFANTS AND CHILDREN.** Here severe colic may be brought on by such widely differing causes as improper feeding, want of cleanliness in the feeding bottles, sudden changes in the temperature, or exposure to chill, etc.

The treatment is more difficult because of the fact that babies stand opiates badly.

The patient should be kept thoroughly warm and protected from chills by being wrapped in blankets with a hot-water bag at the feet. A turpentine stupe, made by sprinkling a cloth wrung out in very hot water with a few drops of turpentine and placed over the abdomen, usually eases the pain and assists in the passage of the wind which commonly collects in the bowel. From one to two teaspoonsful of castor oil may be given by mouth, and to clear out further the intestine of any irritating substance a half pint to a pint of hot water in which five grains of chloral hydrate have been dissolved, may be injected very gently into the bowel through a syringe.

Medicines must be used with great caution. The following mixture, however, is safe, and often efficacious :

℞	Carbonate of magnesium	..	..	..	$\frac{1}{2}$ drachm
	Spirit of chloroform	..	..	..	$\frac{1}{2}$ "
	Syrup of ginger	..	..	..	4 drachms
	Chloroform water	..	..	enough to make	3 ounces
Make into a mixture. Give one teaspoonful every two hours till symptoms subside.					

Where the colic is accompanied by great restlessness and the infant is losing strength from nervous exhaustion, small doses of bromides may be given.

A useful mixture here is the following :

℞	Bromide of potassium	..	..	..	2 drachms
	Oil of peppermint	..	..	..	5 minims
	Mucilage of acacia	..	..	..	3 drachms
	Peppermint water	..	..	enough to make	4 ounces
Make into a mixture. Give a teaspoonful every hour, until restlessness is quieted.					

Colic in an infant may be taken as a sure sign that something is wrong with its feeding mixtures. His milk may be too rich, and when diluted with whey or barley water all tendency to colic may pass off.

A special variety of colic which occurs in lead-workers chiefly is described under LEAD-POISONING.

**COLITIS** is inflammation of the colon (the large intestine from its commencement to its junction with the rectum or lower end). There are three chief types, namely, simple, mucous or membranous, and ulcerative colitis.

**SIMPLE COLITIS** is not uncommon among people who have suffered from dysentery while living in hot countries. It comes on suddenly with severe pain in the abdomen, diarrhœa (a good deal of mucus and usually blood being present in the stools), perhaps vomiting, cramp in the calves, sometimes slight fever, and considerable mental and physical depression. Generally the attack is comparatively mild, but occasionally the diarrhœa is severe and exhausting.

**Treatment.** Put the patient to bed between hot blankets and apply hot water bottles, hot poultices or cloths wrung out of hot water to the abdomen. The patient should be kept on a milk diet chiefly while the attack lasts. The milk is best taken cold. Some physicians recommend the addition of one or two tablespoonsful of good whisky to each half-pint of milk. Whey, milk and isinglass, or white of egg beaten up, may also be given.

To check the diarrhoea, give three minim doses of a saturated solution of camphor in alcohol every ten minutes for an hour, and then every hour for six hours (Dr. William Murrell), or an enema of starch (one ounce of the mucilage), to which has been added fifteen minims of laudanum. Another recommended remedy is ten grains of the compound kino powder, with three minims of tincture of capsicum thrice daily by the mouth.

**MUCOUS, OR MEMBRANOUS, COLITIS.** In this type large shreds or pieces of membrane may be passed by the bowel. There may be much pain and tenderness before the motion, together with pronounced symptoms of indigestion and constipation with flatulence. The disease is a very chronic one, and is most common among middle-aged women.

**Treatment.** The constipation, which is nearly always a troublesome symptom, should be relieved by mild laxatives or by a small soap and water enema daily, if necessary.

A simple yet efficacious laxative here is the following :

R

Confection of senna	..	..	..	..	I ounce
Confection of sulphur	..	..	..	..	I "

Mix well. Take one teaspoonful at night when necessary.

Intestinal antiseptics, such as salol in five to ten grain doses, three times a day, are sometimes prescribed, but their effect is doubtful.

The patient's general health should be built up by leading a moderate, regular life, avoiding worry and fatigue of all kinds, and keeping to a readily digestible diet made up largely of milk and milky foods—custards, puddings, etc.

Sometimes, despite all treatment, this condition persists for months on end. In these cases a surgical operation may be required.

The taking by the mouth of drachm doses of carbonate of bismuth suspended in mucilage and water, four times a day, with daily washing out of the lower bowel with a ten grain to the pint solution of borax and water, has also been recommended. (Murrell.)

**ULCERATIVE COLITIS** is most commonly due to tuberculosis, syphilis, dysentery, typhoid fever, or a malignant tumour.

Another form arises from none of these causes, but is probably produced by some micro-organism which has not yet been identified. Ulcerative colitis is sometimes associated with Bright's disease.



The symptoms are first colicky pains in the abdomen, with attacks of severe diarrhœa often alternating with periods of constipation. The abdomen is swollen, vomiting is often very severe, and gradually extreme prostration develops. The outlook is always very grave.

**Treatment.** Keep the patient in bed, apply cloths wrung out of hot water to the abdomen, and keep him on a diet of peptonised milk, milk and lime water, white of egg well-beaten up, whey, peptonised milk gruel, plasmon, rice, tapioca, and semolina puddings, arrowroot, blanc-mange made with milk, etc. As beverages, barley water and linseed tea are perhaps the best. Avoid beef-tea, meat juices, meat soups, and all kinds of vegetables and fruits.

As drug treatment, the physician in charge may prescribe intestinal antiseptics such as salol, beta-naphthol, etc., but too often little benefit is to be looked for from such measures.

Encouraging results, however, are sometimes obtained from salicylate of bismuth in twenty grain doses or carbonate of bismuth in large doses (1 to 40 drachms three times a day).

The use of enemata is frequently of great service in these cases. Ten to fifteen ounces of a hot saturated solution of boric acid may be injected high up in the bowel twice a day. Or the bowel may be washed out twice a day with injections of warm (80 degrees) boric acid solution (ten grains to the pint). (Carr.) Four or five pints should be used, and the enemata must be continued for four days. High rectal injections once a day of a 1 per cent. solution of argyrol are also recommended.

**COLLAPSE AND SHOCK.** Both of these terms denote a condition of profound nervous depression and weakness of the body in which the patient may be on the verge of death. When the depression is suddenly caused, as by a severe injury, or during an operation, it is called shock; when it comes on gradually, as in some exhausting disease, it is given the name collapse.

Shock may result from crushing of a limb, deep wounds, injury to internal organs, extensive burns, and surgical operations.

Collapse is a common ending in cholera, peritonitis, and great loss of blood. It may occur in typhoid fever, obstruction of the bowels, poisoned state of the blood, and other conditions.

Persons of a sensitive and nervous temperament are much more liable to collapse than the mentally dull, and in consequence they sometimes do not stand severe surgical operations so well.

**Symptoms.** The face is pale and shrunken, the skin is covered with cold clammy sweat, the breathing is slow, and shallow, and the pulse very weak. The temperature of the body falls often below the normal. Prior to unconsciousness the patient's mind remains clear, and he can answer questions rationally.

**Treatment.** The patient should be kept very quiet, lying on his back, and warmly covered with blankets. Hot water bottles should be placed around him, taking great care that they are not too hot, and so produce burns. The head should be kept low.

Heart stimulants, such as brandy by the mouth, or an hypodermic injection of strychnine, may be required, but this can only be decided when the condition causing the shock or collapse is taken into consideration.

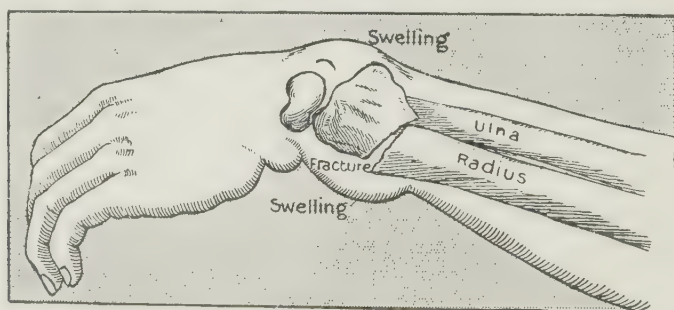
Other measures which can be carried out to lessen or prevent shock include bandaging the four limbs from the toes or fingers upwards to the body (so as to drive the blood back towards the heart), and the injection into the rectum of a pint or more of water at a temperature of 100° F., to which may be added two or three ounces of brandy.

**COLLAR BONE**, the common name for the clavicle. (See CLAVICLE.)

**COLLATERAL CIRCULATION** is the circulation of blood carried on through other channels when an artery is blocked. The smaller arteries open one into another so as to form a net-work. By this means, when a vessel is blocked by a clot or cut out by a surgeon, other vessels dilate and keep the circulation going.

When varicose veins are removed by operation, the blood is in the same manner carried back to the heart by other neighbouring veins.

**COLLES'S FRACTURE** is the name given to fracture of the lower end of the radius (the larger bone of the forearm) at the wrist. It is one of the commonest of fractures, and unless properly treated, may cause permanent deformity of the wrist and loss of movement in the joint.



COLLES'S FRACTURE OF THE FOREARM BONE (RADIUS) AT THE WRIST

Before putting on any splint, the fracture must be "reduced," that is, the broken ends of the bone must be brought back into correct position. As this always necessitates the use of more or less force, and therefore may cause great pain, the patient should be anæsthetised.

The surgeon, grasping the injured hand first, bends it back on the wrist, then pulls downward, and then bends the hand towards the under-surface of the wrist. When once the injured wrist has been again got into position, a well-padded splint, extending from just short of the elbow to the centre of

the palm of the hand, should be applied to the under-surface of the arm. The fingers which curve around the lower end of the splint, grasping it, are left free when the splint is bandaged in position.

On the second or third day gentle movements of the fingers of the injured hand should be begun. After another two or three days the splint should be removed once or twice a day, and the fingers, hand, wrist, and forearm muscles should be gently massaged. A day or two later, gentle movements of the wrist, bending the hand slightly backwards and then slightly forwards, may be begun. If any particular movement brings severe pain, it should be omitted for three or four days, and then tried again.

If the fracture is simply reduced and the splint is put on and left on for a fortnight or more, without carrying out massage and gentle movements of the fingers and wrist daily almost from the start of the treatment, more or less stiffness of the joint, which may persist for many months, is almost sure to result.

After three weeks the splint may usually be left off entirely, but the injured arm should be used with all gentleness for another month or six weeks.

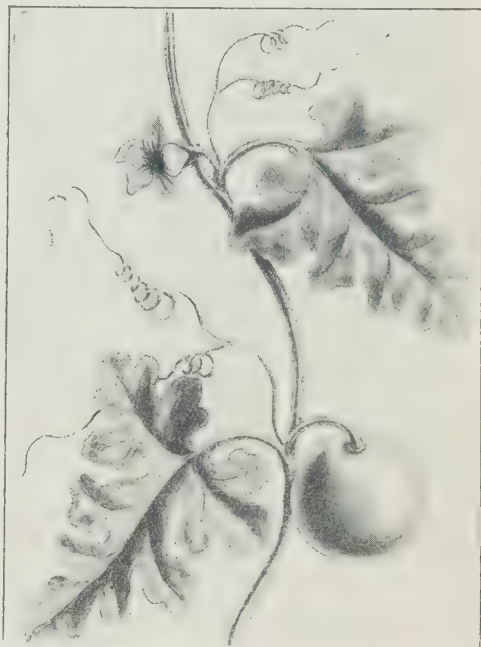
**COLLODION** is often used in medicine when it is wished to spread a protective film over an injured skin surface.

When collodion is applied the contained ether rapidly evaporates, leaving a smooth, glistening, hard transparent surface, which prevents germs and other substances from reaching the wound.

Flexible collodion does not crack as does ordinary collodion if used over a part where the skin bends, as, for example, over a knuckle.

**COLLOID** is a descriptive term applied to a form of cancer which is of a soft, glue-like consistency. It most commonly occurs within the abdominal cavity and in the breast. (*See under* **CANCER**.)

**COLOCYNTH, OR BITTER APPLE**, is much used as a powerful purgative usually in mixture with other drugs, such as hyoscyamus and aloes.



COLOCYNTH, OR BITTER APPLE

It is a species of cucumber, which grows in the Mediterranean countries. The drug is prepared from the dried pulp of the plant.

The official pill of colocynth and hyoscyamus, four to eight grains, is very useful for producing a single abundant bowel movement in chronic constipation.

The drug should never be used in pregnancy.

**COLON.** The main portion of the large intestine. Beginning in the lower right-hand corner of the abdomen, three parts are described. An ascending part, which reaches up to the upper right-hand corner of the abdomen; the transverse, which crosses horizontally to the left side of the abdomen; and the descending, which leads from this to the lower left-hand corner of the abdominal cavity, where it passes into the sigmoid.

Colitis is a term used to describe any inflammation of any of these three parts. It is the distention of this part of the bowel—through the fermentation and decomposition of undigested food—which, by setting up spasmodic contractions of the intestinal coats, gives rise to the severe pain of colic.

**COLOUR BLINDNESS.** To certain people one or more of the colours of the rainbow are invisible. The commonest variety of colour blindness is that in which the person is unable to distinguish red from the other colours. It may appear to him precisely similar to bright green, or it may be simply lacking in luminance. Thus, although he might see a green light very clearly at a mile distance, a red light of the same force would not be sufficiently brilliant to be visible to his abnormal eye. In other types of colour blindness the red may be easily recognised, but the oranges and yellows may appear green, while the browns appear reddish.

Colour blindness may vary from a slight difficulty in always being certain about one colour, up to an absolute inability to be certain of any. The abnormality is commonest in men, and is congenital.

There is no cure for the complaint. The defect, which is often present in people who believe their eyes to be quite normal, can usually be readily determined by placing before the person a large number of skeins of wool of different shades of red, green, brown, yellow, blue and grey, and then asking him to sort out all the reds in one heap and the greens in another, etc.

**COMA.** A very deep form of unconsciousness, from which the patient cannot be roused even for a moment, is termed coma. The commonest causes are apoplexy, Bright's disease, poisoning, and advanced diabetes.

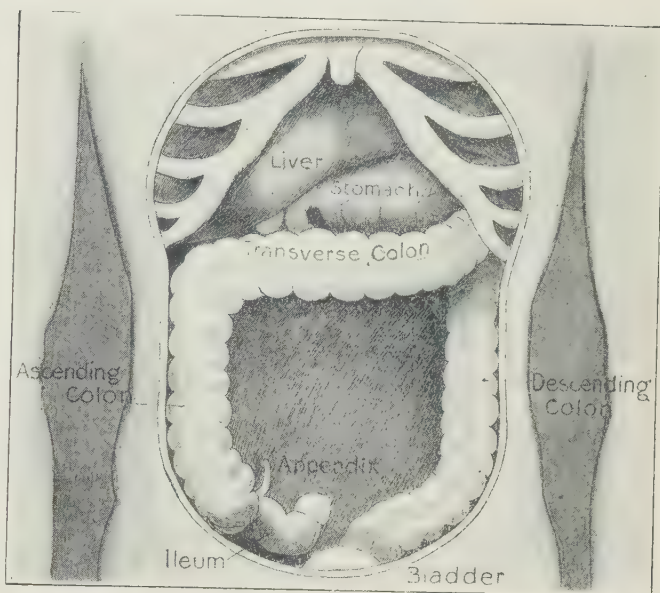
The treatment is included in the treatment of the causative disease.

**COMA VIGIL** is a name sometimes given to a state of unconsciousness which may occur in severe attacks of typhoid fever. Although the patient



is completely unconscious, his eyes are wide open, he mutters constantly and picks at the bedclothes. It is always a grave symptom.

**COMEDONES**  
or **BLACK-HEADS**, are sebaceous glands in the skin, which have been choked with dried-up secretion mixed with dust and dirt. (See **ACNE**.)



THE COLON

**COMFORTER, BABY'S.** The chief danger of the comforter is that it is always very apt to be covered with microbes which are likely to produce indigestion, and sometimes cause diarrhœa, inflammation of the mouth, and other diseases. In addition to these evils, the comforter tends to spoil the shape of the mouth, and very often deforms the palate. A mother who gives a comforter to her baby may quiet the child for the time being, but the baby too often has to pay heavy penalties.

**COMMA BACILLUS** is the name given to the micro-organism which causes Asiatic cholera. It is not a true bacillus, but a spirochæte. The comma bacillus is always present in the intestines of cholera patients. In epidemics the germ finds its way into drinking water, or on to food, and so the infection is spread.

The comma bacillus is shaped like a bent rod, and is about half the size of the tubercle bacillus (*see page 405*).

**COMMINUTED FRACTURE** is a fracture in which part of the bone is broken up into several small pieces. A comminuted fracture is always more serious than a simple fracture, because of the much greater risk of blood poisoning. Again, portions of the broken bone may die (necrosis); or even if this complication be avoided, more or less deformity may persist after healing. (See **FRACTURES**.)

**COMMISSURE** means a junction, and is used in relation to the joining of the lips at the angles of the mouth, to the nerve fibres which join the right and left sides of the brain together, and to other junctions of parts in the body

**COMPENSATION** is a term applied to the thickening and strengthening of the heart muscle which tends to occur as soon as a valve begins to leak, or when there is a gradually developing obstruction to the circulation of the blood.

As long as "compensation" is maintained in disease of the heart, no great inconvenience is felt as a rule. A man may do his ordinary work. But when from an overstrain or other cause compensation breaks down—in other words, when the heart, despite its increased efficiency, can no longer meet the growing demands upon it, serious symptoms arise, and the patient is more or less disabled. (*See under* HEART, DISEASES OF.)

**COMPLEXION.** Faults of the complexion are frequently due to some disorder of the general health, and until this is remedied any local treatments by cosmetics, etc., will effect little or no improvement.

If the liver is inactive, for instance, the complexion will be sallow. The remedy for sallowness in this case is obviously proper treatment of the liver affection.

Indigestion gives rise to an ugly redness (particularly of the nose), to blotches, muddiness, and other evils. Women who value a good complexion should therefore be very careful to avoid indigestion. One soon finds out which kind of food is unsuitable, and this should be shunned. The commonest dietary causes of indigestion in women are too much tea, and the too free use of pastries and other sweet things. Tea should not be taken oftener than twice a day, and it should be of as good a quality as possible.

The practice, not uncommon among women, of neglecting to take a substantial mid-day meal is sometimes responsible for a sallow, pasty complexion. Luncheon, therefore, should be a formal regular meal of meat or fish and vegetables, not, as is often the case, an excuse for taking cakes, pastry and tea.

Afternoon tea is best without the accompaniment of any solid food.

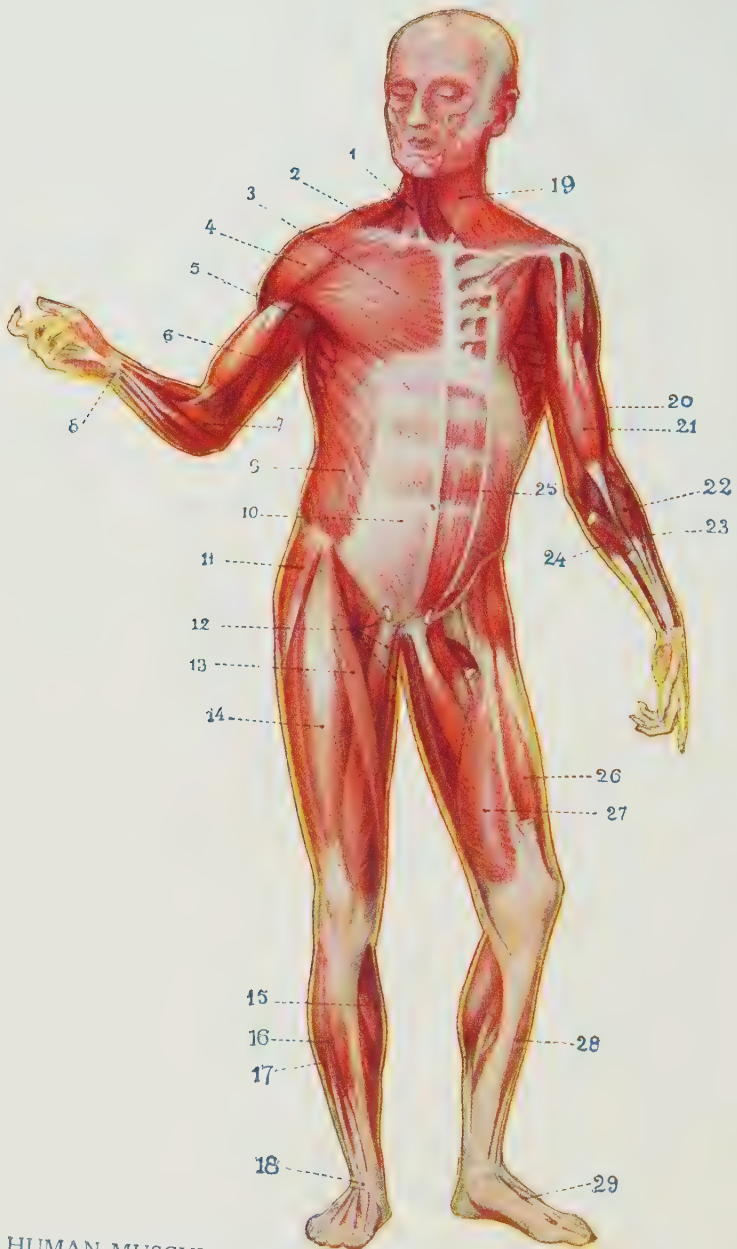
Chocolate and other sweets should be eaten in moderation, and not oftener than once or twice a day, preferably soon after meals.

Tea and other liquids are usually taken much too hot. They should be little above blood heat. A glass of warm water with a pinch of salt is better than a cup of tea or coffee first thing in the morning. Pure, good milk is an admirable improver of the complexion.

Pallor, with blueness of the lips or nose, indicates some defect in the blood or the circulation. This calls for the attention of a doctor who can prescribe the appropriate blood or heart tonic.

Irritability or a constantly depressed condition of the nervous system always has an adverse effect on the complexion. Very often by the exercise of will power a woman may shake off worries and depression. She should make a great effort to maintain a calm, equable temper, and refrain from anger and other unpleasant emotions. The irritability and depression, on the other hand, may be due to some condition of health which can only be remedied by a physician. In this case, therefore, it is well to consult a doctor.





## HUMAN MUSCULAR SYSTEM: FRONT OF THE BODY

1. Sternocleidomastoid (the muscle that bends the head).
2. Trapezius.
3. Pectoralis (chest muscle).
4. Deltoid (arm lifting muscle).
5. Coraco brachialis (rudimentary arm muscle).
6. Triceps (forearm extension).
7. Pronator radii teres (turns forearm and hand).
8. Annular ligament of wrist.
9. External oblique of abdomen.
10. Muscular sheath of abdominal rectus muscle (*see* 25).
11. Tensor fasciæ latæ (fibrous muscle covering thigh muscles).
12. Gluteus (controls thigh and helps to keep body erect).
13. Sartorius, or tailor, muscle (enables legs to be crossed).
14. One of quadriceps extensor cruris muscles. (*See also* 26 and 27.)
15. Gastrocnemius (bends the knee).
16. Long extensor of toes.
17. Peroneus longus (helps to keep foot arched).
18. Annular ligament of ankle.
19. Platysma.
20. Brachialis (moves elbow joint).
21. Biceps (flexor of arm).
22. Supinator longus (turns hand).
23. Extensor carpi radialis (extensor of forearm and wrist).
24. Flexor carpi radialis (bends wrist and turns hand).
25. Rectus abdominis (retracts abdominal wall; *see also* 10).
- 26 and 27. Vastus externus and internus. These, with 14 and an abductor muscle, together make up the quadriceps extensor, the largest muscle in the body. It extends the leg.
28. Tibialis (extends the ankle).
29. Extensors of the toes.



Want of sleep and nervous exhaustion produce dark circles under the eyes and pallor of the skin. Most women should have seven and a half to eight hours' sleep every night, and if of a nervous temperament, they are better for a full nine hours' rest in bed. Unless ailing, however, too much lying abed tends to dull the complexion. Bad air in the bedroom or too heavy clothing also conduce to a bad complexion.

The bedclothes should be just sufficient to maintain pleasant warmth of the body, and the bedroom windows should always be open, whatever the weather may be. Care, however, must be taken to prevent a draught on the head and face, which may produce neuralgia and toothache.

Serious diseases of the heart, the kidneys, etc., are certain to affect the complexion sooner or later. These are entirely a matter for the doctor.

Alcohol and drugs are the sole cause of a bad complexion in many women. Alcohol, in any form, tends to produce congestion of the blood-vessels of the face. This soon develops into redness of the nose, flushing of the whole face, red or pimply patches on the cheeks, and sometimes a yellow colour of the skin.

Drugs are very destructive to the complexion. The constant user of morphia, laudanum, paregoric, etc., will in time have her skin changed into an ugly yellow or brown leathery condition. Many of the headache remedies, etc., now so commonly used by women, are no less destructive. Anyone who takes these must expect to completely ruin her complexion, and there is no remedy except avoidance of the cause.

**Local Applications for the Complexion.** While careful attention to the general health, then, is the basis of a good complexion in all cases, local applications may occasionally be used with some advantage. For example, while the constant over-use of a face powder, no matter how pure it may be, is always certain to have a deleterious effect through blocking up the mouths of the myriads of tiny glands of the skin, a suitable face powder has its legitimate uses.

A face powder, in the first place, should be composed of simple ingredients, pure in quality, and extremely finely powdered. Again, it should not be too highly perfumed or coloured or it may have an irritating effect on the skin. Below are two suitable prescriptions, one for blonde, the other for brunette, which will be found useful for anyone wishing to have her own powder made up by the chemist.

#### FACE POWDER FOR BLONDES

Rx

Bismuth sub-carbonate	..	..	..	..	1 drachm
Zinc oxide	..	..	..	..	4 drachms
French chalk	..	..	..	..	3 ounces
Cornflour	..	..	..	..	1 ounce
Otto of roses	..	..	..	..	2 drops
Carminé	..	..	..	..	A sufficiency

Mix into a very fine, well-mixed powder.

## FACE POWDER FOR BRUNETTES

R	White talc .. .. .	2 ounces
	Fine kaolin .. .. .	1 ounce
	Powdered Florentine orris .. .. .	2½ drachms
	Oil of Ylang Ylang .. .. .	4 drops
	Cadmium yellow .. .. .	A sufficiency

Make into a very fine, well-mixed powder.

While infinitely the most becoming "colour" in the cheeks is Nature's bloom of health, this is not always readily obtainable. The result is that women frequently make use of rouges, which, in time, are certain to have a greater or less ill-effect on their complexions. If a rouge must be used at all, some simple liquid preparation such as is prescribed below will be found at any rate less trying to the skin than the ordinary dry rouge.

## LIQUID ROUGE

R	Pure carmine .. .. .	¼ drachm
	Ammonia solution .. .. .	A sufficiency
	Rosewater .. .. .	2 ounces

Pour the ammonia solution drop by drop on the carmine in a small glass goblet until all the carmine has dissolved. Then add the 2 ounces of rosewater. Cover and allow the mixture to stand for three days, then filter and keep in a tightly corked bottle.

The rouge should be applied most sparingly as follows: With a matchstick apply a tiny drop of the rouge just below the cheek-bone, and then with a little damp cotton wool pad, work it out delicately in all directions, taking care that the edges are becomingly shaded off.

Some women with very delicate skins constantly suffer from roughness of the skin, as the result of washing in hard water. Rain water, if it can be obtained, will do away with this difficulty, as it is delightfully soft. Failing rain water, which should always be used when possible by those desiring a beautiful complexion and soft skin, a teaspoonful of the following lotion added to a hand basin will often greatly soften it:

R	Alcohol .. .. .	4 ounces
	Ammonia .. .. .	½ ounce
	Oil of lavender .. .. .	½ drachm

Mix well, and keep in a tightly-stoppered bottle. Shake well before using.

Sometimes a naturally greasy consistency of the skin mars an otherwise wholesome and healthy complexion. It is in these cases, where the oil glands of the skin exude more than the usual amount of oil, that the over-use of face powders has such a harmful effect.

Women with very greasy skins should take pains to avoid greasy fat food, and should drink plenty of cold water during the day. Besides washing it two or three times a day with warm water and soap, the face should be splashed



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THE WOMAN DOCTOR AT HER STUDIES: THE MEDICAL SCHOOL OF THE  
ROYAL FREE HOSPITAL

over with cold water several times daily, and then dried by dabbing with a soft bath towel, not by rubbing. A cucumber skin wiped over the face and the juice allowed to dry on is an old-fashioned but useful remedy for counter-acting greasiness of the skin.

Another useful measure is to take a small quantity of finely ground oatmeal in the palm of the hand, mix it into a paste with a few drops of rose-water, and then rub gently over the face. A few minutes after the application of the oatmeal, wipe off the superfluous grains with a very soft towel, then rinse the face with warm water and end up with a thorough splashing of cold water. This oatmeal bath carried out two mornings a week thoroughly cleanses the skin and reduces the tendency to over-greasiness.

Powder should never be applied when the skin is covered with grease. First wash the face in warm water, and then before applying the powder gently sop on a little of the following lotion and allow it to dry on.

R						
	Boracic acid	..	..	..	..	25 grains
	Distilled witch hazel	..	..	..	..	2 ounces
	Orange-flower water	..	..	..	..	3 "
	Distilled water	..	..	..	..	3 "

With some women of particularly delicate skins the use of water and soap, no matter how soft the one may be or how pure the other, is always followed by a disfiguring eruption which may last for hours. The problem of keeping the face clean in such cases is no small one.

The following prescription of a cleansing cream is one which can be used with advantage in these cases :

R						
	Liquid paraffin	..	..	..	..	2 drachms
	Spermaceti	..	..	..	..	3 "
	Oil of sweet almonds	..	..	..	..	4 "
	Lanoline	..	..	..	..	2 ounces

Mix together while hot, and then add the following :

	Borax	..	..	..	..	10 grains
	Concentrated rosewater	..	..	..	..	1 ounce

Mix both together while hot, and then stir constantly till cold.

A little of this cream rubbed in well all over the face and then wiped off with a very soft linen towel will remove all the dust accumulated during the day and leave the skin smooth, soft, and unirritated.

For the treatment of special complexion defects such as freckles, sunburn, acne spots, etc., *see under these special headings.*

**COMPLICATIONS** are additional affections which may arise in the course of a disease.

For example, in scarlet fever, there is great liability to such complications as inflammation within the ear or in the kidneys or joints. Influenza is frequently complicated by affections of the lungs, heart, nervous system and

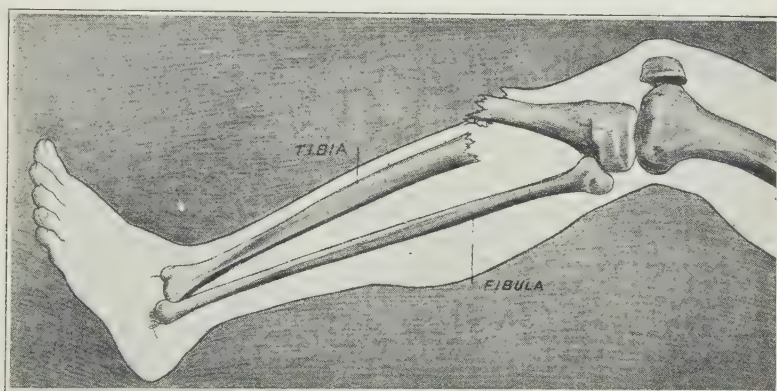


digestive system; in acute rheumatism the heart may become involved. In many cases the complications are more serious than the primary disease, and often are the real cause of death. For example, measles in itself is not a very serious ailment, but should the complication of broncho-pneumonia set in during convalescence, as not infrequently happens, the outlook immediately becomes very grave.

**COMPOSITOR'S DISEASE** is the name popularly given to the lead poisoning which occurs in this occupation from the handling of type.

To prevent it, the hands should be thoroughly washed before each meal, and the nails brushed night and morning. The fingers should never be put to the mouth while at work. (*See LEAD POISONING.*)

**COMPOUND FRACTURE** is that form of fracture in which the skin or mucous membrane over the bone is wounded, so that there is a way of communication between the outside air and the seat of the fracture. There is always, therefore, an increased danger of infection from germs finding their way into the wound. (*See under FRACTURES.*)



A TYPICAL COMPOUND FRACTURE

It is always of the greatest importance that a simple fracture is not converted into a dangerous compound fracture by careless or ignorant handling. In the example selected the broken tibia has, perhaps by mis-handling, pierced the skin and opened the way for germs.

**COMPRESSES.** Cold compresses may be used (1) to subdue pain, as for instance over a strained joint; (2) to lessen inflammation, as for example over the appendix region at the very start of an attack of appendicitis with a view to preventing an abscess forming; (3) to prevent bleeding under the skin as after a "black eye," and (4) in place of a poultice for dilating the blood-vessels of any part.

A cold compress first causes the superficial blood-vessels to contract, but in a few moments, as the body-heat warms the compress, profuse perspiration occurs and the blood-vessels dilate, bringing an abundance of blood to the part.

As a general rule, cold compresses are most useful in the early stages of

inflammation, and hot compresses or poultices (*see* POULTICES), when the inflammation is advanced and abscess formation inevitable.

The commonest form of compress is a fine towel wrung out in cold water and laid over the part, the moisture being kept in by covering the whole with oiled silk or other waterproof material and a bandage.

**COMPRESSION** of the brain is a very serious condition which may be caused by a tumour, a blood-clot, the pressure of bone in fractures of the skull or a foreign body such as a bullet. (*For symptoms and treatment see* BRAIN.)

**CONCEPTION** is a term used to denote the changes which begin to take place in the mother at the moment when the spermatozoon, the male fertilising element, reaches the ovum, the female element.

**CONCRETIONS** are hard, stony deposits sometimes found in the tissues of the body. In gout urate of soda is deposited in the joints, cartilages, etc., forming the well-known "chalkstones." In the gall-bladder and bile ducts gall-stones may be formed. Stones also develop in the kidneys and urinary bladder.

After the healing of a portion of a lung injured by tuberculosis, lime salts are sometimes deposited forming concretions. Indigestible matters, such as hairs, the husks of oatmeal, the skins of some fruits, etc., may accumulate in the intestine forming obstructive concretions.

**CONCUSSION.** The symptoms which result from a shaking up or bruising of the brain as the result of a blow on the skull, or a severe jolting of the body are given the name concussion. The symptoms may range from deep unconsciousness, with subsequent loss of memory, or irritability of temper, which may last for many days or weeks, down to a simple "seeing stars" and headache.

In mild cases, the only treatment necessary is a few hours rest in bed in a quiet, darkened room, and the absence of all excitement or brain worry. An ice cap to the head will often relieve the headache. The diet should be light, chiefly milky foods until the system recovers from the shock.

Where the unconsciousness continues for more than a few moments, the doctor should at once be called in, because in these cases there is always danger that the base of the brain may have been fractured, or that the seizure may be due to apoplexy or a clot in one of the vessels in the brain. (*See* BRAIN DISEASES *page* 266).

**CONDENSED MILKS** are prepared by removing the water from cow's milk.

The value of condensed milk as food for a human infant depends on whether it is made from skimmed milk (when it is practically worthless as an infant's food) or from rich, creamy milk. The best condensed milks for infant feeding are the unsweetened brands made from rich, creamy milk. By adding water to these a mixture may be obtained containing roughly the percentage of



THE MATTHEW WHITING, A MEN'S WARD



GENERAL VIEW OF THE HOSPITAL BUILDINGS



THE WIGRAM, A WOMAN'S WARD



proteid (meaty elements), sugars, fats, and water to be found in ordinary cow's milk. With this diluted mixture to work upon, "modified milks" more or less closely resembling human milk in the proportions of their fat, sugar, and proteids can be prepared just as if ordinary fresh cow's milk were being used.

Sweetened condensed milks, as a rule, give less satisfactory results than the unsweetened, because of the greater amount of calculation and care required in diluting them so as to get the proper proportions of proteids and fats. If such a mixture is diluted sufficiently to leave the correct percentage of proteids in the liquid milk, the proportion of sugar will often be much too high. If any more water is added to make the sugar proportion correct the percentage of proteids and fats will be too low.

While different condensed milks vary somewhat in strength the following modification will give a fairly adequate substitute for mother's milk if an unsweetened brand, made from rich pure milk, is used. To two tablespoonsful of condensed milk add eight tablespoonsful of water, a teaspoonful of cream, and one teaspoonful of milk sugar. This will result in a mixture containing about 2 per cent. of proteids,  $3\frac{1}{2}$  per cent. of fats, 6 to 7 per cent. of sugar, and  $87\frac{1}{2}$  per cent. of water.

Even after the most careful dilution as above, it should be remembered that condensed milk, being a more *artificial* food than pure milk, rarely gives as good results as the latter in infant feeding. No matter how much care is given, signs of malnutrition, wasting, or even rickets not uncommonly develop. In any case, though it may be convenient or necessary to feed an infant for a few weeks on condensed milk, a return to pure fresh cow's milk (correctly modified, of course) should be made at the first opportunity.

**CONDIMENTS.** Mustard, pepper, spices, cinnamon, etc., are common condiments used to stimulate the appetite. Useful in very moderate doses, condiments nevertheless have an irritating action on the stomach, and if taken too freely may set up more or less severe dyspepsia.

**CONDYLE** means a rounded projection of bone. At the lower end of the thigh-bone (the femur) are two condyles, the inner and outer which form the prominences of the knee at each side; at the elbow are also two condyles, the prominences of the bone of the upper arm (humerus).

**CONDYLOMA.** This term is applied to a moist, warty growth which sometimes develops round the lower opening of the bowel in syphilitic patients. Condylomata also occur at the angles of the mouth, and sometimes between the toes. The moisture which they sometimes secrete is extremely infectious.

**CONFECTIONS** are drug mixtures in which sugar or honey is used to hide the unpleasant taste or odour. The dose of most confections is a teaspoonful.

A mixture of equal parts of the confection of senna and the confection of sulphur is a very useful purgative for people with hæmorrhoids, who are unable to make use of strong purgatives which have an irritating effect on the lower bowel.



**CONFINEMENT, PREPARATION FOR.** The expectant mother will do well to arrange in good time with the doctor and nurse who are to attend her. Her next care must be the choice of the bedroom she will use on the occasion.

The chief points to be considered are that the room shall be airy, convenient, and quiet. If the house looks out on to a noisy thoroughfare it will be best to decide on a room at the back. One which contains a fireplace should be chosen. If the confinement takes place in summer, it may not be necessary to have a fire lighted, but there is always the possibility of a change to damp, rainy weather making extra warmth needful. The chimney, too, aids in the ventilation of the room. See that the fire will burn without smoking. Also test the window, to be sure that it opens and shuts quietly and easily both top and bottom.

Shortly before the confinement the lying-in-room should be cleaned thoroughly. The floor, if covered with anything that can be washed, such as linoleum, should be scrubbed well over with water, to which carbolic acid, a teaspoonful to the pint, has been added. If carpet is used, it should be taken up, well beaten, and hung in the air and sunshine for some time before being returned to the room. Meantime, the floor should be well scrubbed, about four tablespoonsful of carbolic acid being put in the pail of water used for the purpose.

Curtains and bedclothes should be quite clean, the latter having been previously thoroughly boiled in the wash, and then well aired.

The bedstead should be an iron one, and it should have a comfortable, firm spring mattress. A soft mattress, or feather bed is not convenient. Curtains to the bed are unnecessary, and better not used. All valances should be removed.

Place the bed in a convenient position. It is an advantage to be able to approach it easily from either side; but, in any case, the right side must be accessible for those in attendance. Do not crowd the room with furniture. It must contain, besides the bed, an easy chair, small table, night stool, a bath for the baby, a jug, and basin.

In this room should be placed in readiness all the articles likely to be required at the confinement: The mackintosh sheets, or whatever will be used in that way for protecting the bed, two sheets of cotton wool (one pound of cotton wool), a pair of blunt-pointed scissors, and some previously boiled stout linen thread, cut in lengths of about ten inches.

A good supply of towels and napkins should be in the room, two nail-brushes, two or three clean and new sponges, and two washing basins. A small jar of boracic ointment, some smelling salts, a fan, and a small flask of brandy should also be placed handy in the room. There should also be a thermometer for testing the temperature of the room, which should not be allowed to rise above 60° F.

The baby's basket will be placed in readiness, containing the garments to be first put on the little stranger. Some boracic lint, vaseline, starch powder, safety pins, and needle and thread, a very soft sponge, a piece of soap, and a flannel receiver for wrapping the child in must also be to hand.

**Signs that Labour is Near.** In some cases, for as much as a week or ten days, before her confinement, a woman may notice an alteration in her figure. She seems to be smaller in the abdomen, especially her waist is less. She will notice that she is able to breathe with more ease. The reason is that the womb has dropped lower in the pelvis, and is no longer pressing on the base of the chest. This "sinking" increases very much, on the last day or two before the birth of the child, and is a sure sign that labour will not long be delayed.

The alteration in the position of the womb transfers the pressure from the chest to the bowels and bladder, which often become irritated at this time.

There is a frequent wish to empty the bladder, and this must be given way to, otherwise inflammation may ensue. The bowels, too, are often troublesome; either constipation or diarrhœa may be present. If the former, it must be promptly remedied by a dose of castor oil, or an enema, as it is important that the bowel should be cleared before labour commences.

Sometimes the patient is much troubled by tenesmus, or a sensation in the rectum which causes straining to empty it. This may usually be speedily relieved by an injection of fifteen drops of tincture of opium in half a glassful of starch and water, which has been previously boiled, and then allowed to become almost cold.

For the last few days before confinement a light-coloured discharge is often noticed, and as it gets near the time, this is generally slightly streaked with blood. The "show," as this is called, is usually followed, within twenty hours, by the commencement of labour. Vague pains are felt in the womb, back, hips, and thighs. At first they are only slight in character, but increase in duration and severity until the child is born.

**Arrangements for Nurse.** If the nurse is not to sleep in the patient's room, it is necessary to have her as close at hand as can be conveniently arranged, either in a room which opens from her patient's, or next door. For the latter case, an electric bell should communicate with each room, so that she can be readily called during the night if needful. The baby would then sleep, and be washed and dressed in the nurse's room. The nurse would take her meals there also.

Some mothers prefer to keep the baby with them at night, so have a bed for the nurse arranged in their room.

When this is the case, the nurse will still need somewhere to keep her clothes, wash and dress, etc.



GENERAL VIEW OF THE HOSPITAL FROM PARNELL'S MONUMENT



THE ENTRANCE HALL



STUDENT'S MESS ROOM



THE SMYLEY WARD, A GENERAL WARD

THE ROTUNDA MATERNITY HOSPITAL, DUBLIN

**Drains in Order.** A point that needs most careful attention is that the drains of the house must be in perfect order. If there is any suspicion that they are not quite in a satisfactory state, measures should be at once taken to test, and if necessary, correct them. (*See DRAINS.*)

Just after her confinement a woman is very susceptible to harm from bad smells, or anything unwholesome in that way.

**To Prepare the Bed.** This should be done in such a way that after the birth of the child the mother can be made comfortable without being disturbed by having the bed remade.

First, place a mackintosh sheet next to the mattress, and over it spread either a folded sheet or a blanket. This must be covered by a sheet arranged in the ordinary way, and well tucked in so as to hold everything in place. These things will remain after the confinement. They should be protected by a second piece of mackintosh, large enough to cover all the middle of the bed, and reaching well to the sides. This should be covered by a folded sheet, which has been doubled till it is about one yard wide and two yards long. Put this across the bed, and tuck in at the sides. This, which is known as the "draw" sheet, will be removed as soon as the labour is over, leaving the bed quite dry and comfortable for the mother.

If mackintosh sheets cannot be obtained, American cloth is a good substitute, or even strong sheets of brown paper will protect the bed.

To further provide against discharges at the time of the confinement, a sheet of cotton-wool placed under the patient is useful, or a rough towel that has been previously boiled and dried may take its place. It is well to let it hang a little over the bed on the right side. The floor, too, on that side should be protected in some way. A bath blanket or even old newspapers may be thrown down, and can easily be removed when the need for them is past. Have ready something in which soiled articles can be placed. A bucket with a cover to it, or an old foot bath is often used for this purpose.

**Dress During Confinement.** Besides the nightdress, a flannel petticoat should be worn. It must be perfectly clean, but an old one that will not again be needed will do.

When the patient goes to bed the nightdress should be folded up, well above the waist, and pinned in position, so that it cannot become at all soiled. When the confinement is over the flannel petticoat can be removed, and the nightdress pulled down so that the patient can be comfortable without the fatigue of changing.

**When to Send for the Doctor.** As soon as the labour pains have really started, it is well to send for the doctor, especially in the case of those who have already become mothers, as sometimes the child is born very quickly after the pains are felt.

In a first confinement the process is sure to take longer. From twelve to twenty-four hours is the average time, though it may be more or less.



As soon as labour has started, as shown by the "shows," regular pains, or rupture of the waters, the doctor must be notified at once. He will then decide whether it is necessary to go immediately or not.

It is always much safer to let the doctor know at once, as, after he has examined his patient, he will know how far matters have proceeded, and can stay in the house overnight or not, as he deems necessary. If he decides that he can safely leave for a time he will visit patients in the neighbourhood, and in that case will mention where he is to be found, so that a message may reach him should anything unforeseen occur and his immediate presence be needed.

**Points for Nurse to Attend to.** The nurse, or whoever is taking charge of the patient at the confinement, must always be sure that means for procuring an abundance of hot water are at hand. For this reason it is well to have a fire burning in the lying-in room, and a clean, moderately large kettle ready to place on it.

Should the weather be warm the fire must not be a large one, or the apartment will become over-heated.

If hot water is needed it will probably be wanted as quickly as possible, so that it should be always ready. The nurse must not wait until it is required before placing the kettle on the fire.

A supply of cold water which has been previously boiled should be in the room, as this is certain to be useful at some time.

The nurse should also assure herself, in good time, that some suitable antiseptic solution and lubricant for the doctor's hands have been provided. For the antiseptic carbolic acid is commonly used, putting forty parts water to one of the carbolic. Perhaps a better antiseptic is a one to two thousand solution of perchloride or biniodide of mercury. A good lubricant is carbolated vaseline or Sanitas carbolic ointment.

The first duty of the nurse (or whoever is in attendance) is to see that the patient is kept as cheerful and hopeful as possible at the beginning of the confinement.

She should make certain that the bowels have been cleared by means of a suitable aperient, and if not should give an enema, which may consist of about a pint of warm water in which a little soap has been dissolved, or a large dessert-spoonful of olive oil. The next duty of the nurse is to prepare the bed as directed, and see that the dress of the patient is suitable.

As labour advances, she may afford the sufferer relief by pressing on the back when the pains are most felt there.

She should be ready with a fan, as towards the end of a confinement heat is often complained of.

When labour is drawing near its end, and her help will be needed, the nurse should freshly wash her hands with soap and water, taking care that

the nails in particular are thoroughly cleansed. As an additional precaution she should then rinse them thoroughly in an antiseptic solution similar to that prepared for the physician in attendance.

When the birth of the child may be expected any minute, she should lift up, and support the right knee of the mother, so that there is plenty of space.

Should the doctor not be present when the head of the child is born, the nurse must feel that the cord is not tight round its neck, or it may be strangled. If this cord, which may be twice or even three times round the neck of the child, seems pressing, she must gently loosen it, or pass it over the head. She should also see that the mouth and nose of the infant are free from mucus, as this may prevent it from breathing. The mouth can easily be cleared by inserting the tip of a finger. She should at the same time protect the child as much as possible from any discharge.

Let her then place her hand under the head of the child and support it as the body and legs are born.

Care must be taken that the expulsion of the child from the womb is left entirely to nature. The nurse must never pull the infant at all, and so attempt to aid in the birth. Should the doctor be expected shortly, let the nurse await his coming to divide the cord. Raise the bed-clothes on one side, and fold slightly back, supporting them by placing something under them, such as a book placed on end, or anything that will lift them sufficiently to allow of air getting to the child, so that it is not smothered. At the same time turn the baby's face towards this opening so that it may be able to breathe, and also to keep it out of the way of any discharge.

If the doctor, however, is too far away, or his coming is uncertain, the nurse must divide the cord herself. For this she will have in readiness the strands of previously boiled thread and the blunt-pointed scissors.

Take the cord in the left hand, and about three inches from the body of the child tie firmly with one of the threads. Squeeze the cord slightly to force the blood it contains in the direction of the mother. Then tie the cord a second time, the knot here being a little more than one inch from the first, and cut between the two. Take care in doing this that no part of the child, such as a finger, etc., is in the way, and so gets injured.

Examine the portion of the cord which is attached to the child to be sure there is no bleeding from it. If it is not firmly enough fastened (and this sometimes happens) a child may readily bleed to death. If all is well, the infant can be placed in the flannel which has been kept near the fire to be warm for its reception, and it will take no harm if left for a few minutes while the nurse attends to the mother.

When labour has commenced it is not necessary for a woman to go to bed at once. On the contrary, she will usually do better to move about her room



AN OPERATING THEATRE



THE HOSPITAL CHAPEL



A LECTURE ROOM



THE GENERAL KITCHEN OF THE HOSPITAL

as long as possible, and to indulge in conversation that will take her thoughts off herself. Her companion or nurse must, of course, take care not to talk of anything likely to prove depressing. Especially must the nurse avoid speaking of other cases she has attended which have not had a happy issue, or in which complications have arisen.

Besides the nurse and doctor only one female friend should be allowed in the room during a confinement, and she must not be of an excitable nervous disposition.

At the beginning of labour there is a slight tendency to shivering and vomiting. The sickness need cause no anxiety, as it will not in any way delay the confinement, but rather the reverse.

For the shivering give something warm to drink, a cup of tea, boiled milk, or a basin of gruel.

Another trouble often met with is cramp. To relieve this the attendant should massage the limbs strongly with the warmed hand. Camphorated oil, slightly heated, and well rubbed in is also an excellent remedy.

**Examination by Doctor.** The doctor on first arriving will examine the woman to see how far labour has advanced, and also to be sure the position of the child in the womb is a natural one. When this is the case the head of the child is born first. It sometimes happens otherwise, and then the labour is longer and more painful.

If the doctor finds the child is not in the right position in the womb, he can (if he has been summoned in time) rectify what is wrong. This may not be possible if labour has advanced too far.

It is a great mistake to be afraid of sending for the doctor too soon. When once labour has actually begun he should be notified without delay. If after examination he finds the position of the child a normal one, he will be able to judge whether or not he can leave the patient for a time and return later. If, on the contrary, he finds the child's position in the womb requires alteration he can at this early stage readily put this right. The examination is best made just as a pain is coming on, and while it is taking place the patient must lie in bed on her left side, with the knees slightly bent. She should leave herself entirely in the doctor's hands, and avoid all straining.

At the end of the examination he will be able to tell her if all is going well. At this early state it is impossible for a doctor to say how long the labour will last.

**CONFLUENT SMALLPOX** is a very severe type of that disease in which the pocks coalesce or run together, so as to form patches of rash. In discrete small-pox the pocks remain separate. Confluence occurs especially on the face, hands and feet.

**CONGENITAL DEFORMITIES** are those which are present at birth as distinguished from acquired abnormalities which develop later in life.



**CONGESTION.** When inflammation is about to set up in any part the first step in the process is a dilatation of the blood vessels with an increased flow of blood to the part. This blood accumulation is described as congestion. The liver, the kidneys, or the lungs may all be subject to local congestion. The term, however, does not denote a disease or ailment of itself, but is simply a symptom of some other disease. Treatment of congestion, therefore, will be found under the headings of diseases of these organs.

A special form of congestion of the lungs due to escape of the serum, or colourless blood fluid from the lung vessels is sometimes a very dangerous complication in diseases of old people who have to lie continuously on their backs.

**Hypostatic Congestion.** Here, by the action of gravity fluid collects in the lungs, and may sufficiently interfere with the breathing as to throw a dangerous strain on both the heart and the lungs. The only successful treatment, either preventive or after the congestion has set in, is to change the patient's position in bed as frequently as possible, propping him up first on one side, and then on the other.

**CONIUM** is prepared from the leaves or the fruit of the hemlock. The following three preparations are included in the pharmacopœa :

Juice of conium	Dose 1 to 2 fluid drachms
Tincture of conium	„ ½ to 1 drachm
Ointment of conium	

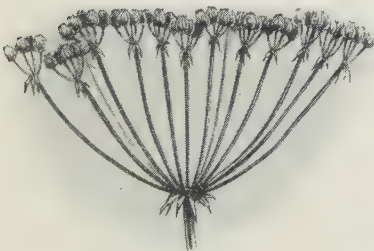
The chief constituent of conium is an alkaloid called *conine*, which readily decomposes in the presence of light or heat. As a consequence the strength of the different conium preparations can rarely be relied upon.

For this reason conium, although included in the official lists of drugs, is very rarely used in medicine.

**CONJUNCTIVA.** The thin membrane which lines the eyelids and covers the front of the eyeball.



FOLIAGE OF HEMLOCK (CONIUM)



FRUIT OF HEMLOCK

**CONJUNCTIVITIS** is an inflammation of the transparent membrane which covers the white of the eye and lines the eyelids.

Conjunctivitis may result from injury, a blow on the eye, a foreign body, grit or dust blowing into the eye, from catching cold, or it may be due to the action of microbes.

As most cases are very catching the sufferer should be kept in a darkened room by himself during the height of the disease, and the greatest care should be taken that none of his sponges, towels, or bed-linen should be used by anyone else. As it is impossible to determine in the early stages whether the conjunctivitis present is of a simple nature, or one of the very rapidly destructive types, no time should be lost in calling in a physician. Unless immediate improvement is noted as a result of a few hours' rest in a dark room together with frequent bathing of the inflamed eye with a one in twenty solution of boracic acid and water, more vigorous treatment which only a physician can carry out must be constituted. The various forms of conjunctivitis (catarrhal, gonorrhœal, infantile, granular, follicular, membranous, and phlyctenular) are dealt with in the pages following.

**CONJUNCTIVITIS, ACUTE CATARRHAL FORM.** The whole eye is bloodshot, numerous bright red vessels being seen in a network over the white of the eye. There may be great swelling, with burning, itching, and even severe pain. The patient cannot bear to look at any bright light on account of the irritation it causes. There is a discharge, watery in the early stages, perhaps becoming thick and mattery after forty-eight hours or so. The patient generally complains that his eyelids are stuck together in the morning.

**Treatment.** In a severe case where the lids are greatly swollen and the disease has come on suddenly, indicating the presence of active micro-organisms, the eye should be bathed every half-hour with a ten-grain to the ounce solution of warm boracic lotion, and the physician sent for at once.

The patient had best be in bed, even if only one eye is affected. Both eyes, however, are usually involved. In the intervals between the bathings circular pieces of lint soaked in the boracic lotion should be placed lightly over the eyes, the patient lying on his back in bed.

Sometimes this treatment, if thorough, will check the disease, but in the great majority of cases within a few hours a discharge develops.

Silver nitrate and protargol are useful remedies here. The lids may be painted once daily with a solution of silver nitrate, 5 grains to the ounce of water, or a 1 % protargol solution. A dozen or more times during the day the eyes should be gently but thoroughly bathed with warm boracic solution, five to ten grains to the ounce. The nurse should gently open the lids, and squeeze a few drops of the solution into the eye itself. To prevent the lids sticking together their margins may be painted with boracic ointment at night.

On account of the constant danger of the cornea becoming involved with the formation of ulcers requiring instant attention, the treatment of none but the mildest types of acute conjunctivitis should be undertaken by the layman. Silver nitrate, of such striking benefit when correctly used, may do much more harm than good if used by an inexperienced person. In the same way, at any moment if ulceration threatens atropine may be required to dilate the pupil.

A bandage should practically never be worn in acute conjunctivitis, as it is essential that any discharge should be able to escape readily.

In milder cases the patient need not be in bed, but his eyes should be protected from all light by an eye-shade.

**CONJUNCTIVITIS, CHRONIC CATARRHAL FORM.** Here the white of the eye is constantly more or less bloodshot, and there may be inflammation of the edges of the lids. There may be a slight amount of discharge collecting in crusts in the inner corner of the eye, and the eyelids may be constantly stuck together on waking in the morning. The patient usually dislikes all bright lights, and complains of burning and gritty feelings in his eye towards the end of the day.

Here again the physician may paint the conjunctival surfaces with a 1 to 2 % protargol solution if there is any discharge, or he may prescribe the following lotion, which sometimes gives excellent results in these cases :

R

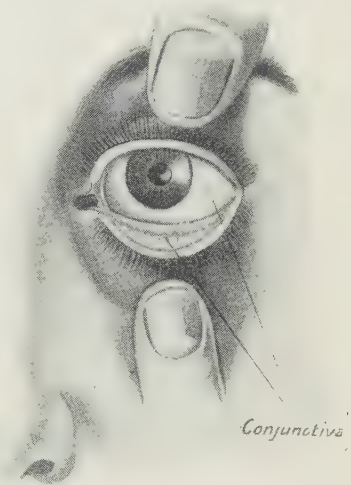
Boric acid..	..	..	..	..	..	5 grains .
Zinc sulphate	..	..	..	..	..	1 grain
Distilled water	..	..	..	..	..	1 ounce

Put 1 or 2 drops into each eye each morning on rising.

To prevent the lids sticking together the margins may be lightly smeared with a weak yellow oxide of mercury ointment at the same time.



ACUTE CATARRHAL CONJUNCTIVITIS



EYELIDS TURNED BACK TO SHOW THE CONJUNCTIVA

**CONJUNCTIVITIS, GONORRHOEAL** is the result of the micro-organisms of gonorrhœa being carried to the eye on the finger, towel, etc. Gonorrhœal conjunctivitis in the infant is described under Ophthalmia Neonatorum (page 469).

**Symptoms.** Coming on within a few hours to three days after infection, the first stage of

the disease resembles severe, acute catarrhal conjunctivitis. Stiffness of the eyelids, a smarting, burning pain, an inability to face the light, and tears streaming over the lids are usually the first symptoms noted. In a short time, one to three days, these are followed by pronounced redness, puffiness and swelling of the lids, and a thick, yellowy, mattery discharge. Within a few hours the lids may be so swollen that it is impossible to open the eye at all.

The diagnosis between this disease and an unusually severe case of acute catarrhal conjunctivitis can only be made by finding the micro-organism of gonorrhœa in the discharge from the eye.

Whether in the new-born infant or in the grown person, gonorrhœal conjunctivitis is a most destructive and dangerous disease demanding the physician's instant attention if the eye is to be saved.

The patient should be put to bed at once, and if one eye (the rule, in the adult) only is affected, the other eye should be immediately protected from infection with a Buller's shield. This consists of an ordinary watch-glass placed between two layers of adhesive strapping, each of which has a circular hole in the centre. This is placed over the sound eye, the hole in the two layers of adhesive plaster being just over the pupil. The edges of the plaster, which extend beyond the glass, are then applied to the skin of the brow, base of the nose, upper part of the cheek and temple. In this way a protective mask is formed about the sound eye, greatly lessening the chances of infective material reaching it. For purposes of ventilation a small opening may be left in the plaster near where it is stuck to the temple.

Until the physician's arrival to take charge of the case, the patient should be kept quiet in bed, lying on his side, with the affected eye downwards so that none of the discharge can possibly find its way across the bridge of the nose to the sound eye.

To relieve the swelling, a series of ice compresses may be applied. A large piece of ice should be placed in a bowl besides the patient's bed, and on the ice some half-dozen pieces of lint, as large as half-crowns, may be placed. One of these icy cold pieces of lint should be gently laid on the inflamed eye every few minutes, being replaced by a cold piece as soon as it grows warm from the heat of the eye.

Every half-hour the affected eye should be thoroughly bathed, from the nose side of the eye towards the temple, with a small piece of cotton-wool soaked in boracic acid solution, ten grains of the boracic to the ounce of water. The object here is to wash away the discharge as it forms, and prevent it accumulating under the lids. Between the bathings a piece of lint lightly wrung out in the boracic lotion may be placed over the affected eye, unless the ice-water compresses are being used.



To allay the discharge, the inner surface of the lids should be painted over once daily with thirty per cent. protargol (Jessop).

The importance of calling in a physician without a moment's delay immediately gonorrhœal conjunctivitis is suspected cannot be too strongly emphasised. If adequate treatment is begun within a few hours of onset the eye may be completely recovered within a week or ten days. If, on the other hand, vigorous continuous treatment is postponed for even as short a time as twelve hours, a perforating ulcer of the cornea may have permanently destroyed the sight of the eye.

Gonorrhœal conjunctivitis ranks with acute gangrenous appendicitis as an ailment in which every hour lost before treatment is begun may be fatal.

In addition to the measures described above, stronger antiseptic solutions such as perchloride of mercury may be considered necessary to check the spread of the gonorrhœal organisms.

**CONJUNCTIVITIS IN THE NEW-BORN, PURULENT, OR OPHTHALMIA-NEONATORUM.** The ailment (generally gonorrhœal) usually first shows itself on the third day, but may appear as late as the seventh to tenth day. Both eyes are usually affected.

The disease is considered to be the cause of at least thirty per cent. of the blindness in the United Kingdom.

**Symptoms.** Closely similar to those in the same disease in the adult, they are as a rule slightly less severe. The lids are swollen, reddened, and glued together. On gently pressing the lids apart, a layer of yellow matter may be seen covering the eye underneath.

The outlook is good if treatment is commenced at once. On the other hand, if treatment is delayed or carried out carelessly or in a half-hearted fashion, the infant may permanently lose the sight of both eyes.

**Treatment.** Every two hours the eye should be washed out very gently with warm boracic solution (ten grains of the boracic to the ounce of water) alternating with weak Condyl's Fluid (fifteen drops to the ounce of distilled water) and silver nitrate drops (two grains of the silver to the ounce of distilled water). (Jessop.)

During the night the child should be awakened at four-hour intervals for this treatment. Every second day the lid should be turned back and gently painted with silver nitrate solution (five grains to the ounce). To prevent the lids sticking together and imprisoning the discharge, the edges may be greased nightly with a little zinc ointment.

**Preventive Treatment.** The disease would be practically unknown if the eyes of every child were carefully and thoroughly washed out with boracic acid (ten grains to the ounce) immediately after birth, and then a few drops of silver nitrate solution (two grains to the ounce) were dropped in each eye. As an additional precaution, if there is any history of gonorrhœa in the mother,

the vagina should be thoroughly douched out with some antiseptic solution such as weak permanganate of potash (one drachm of the permanganate to the pint of warm water) immediately before the child is born.

**CONJUNCTIVITIS. TRACHOMA OR GRANULAR LIDS** is another very chronic and contagious form of conjunctivitis or inflammation of the conjunctiva lining the eyelids. On everting (pulling up) the upper lid, a mass of fleshy, pinky granules may be found scattered over the conjunctival surface. The conjunctiva may have a velvety look, as if sago grains had been scattered over it; later there may even be a warty outgrowth of the tissue lining the lid.

**Symptoms.** Continuous burning and itching of the lids, developing finally into acute pain, are the chief symptoms. The eyes are constantly red and gritty, the lids may be stuck together in the morning, and the patient avoids all bright lights. Frequently there is a discharge from the eyes which is highly contagious. There may be loss of eyelashes, with a turning inwards or outwards of the angry, inflamed-looking lid edge. The disease persists for months or years, getting better at times, and then relapsing. Because the eyelashes are dragged across the delicate cornea (through the lids being inverted) the cornea may become intensely inflamed, or even ulcerated. Hence there may be serious curtailment of vision, if not actual blindness.

Trachoma should always be looked upon as a very serious disease, since if not checked, it may lead to permanent, incurable blindness.

Its highly contagious nature should be impressed on both the patient himself and on all the other members of his family. The patient should sleep alone, and no one else should ever make use of his sponges, towels, pillows, etc., otherwise they run a grave risk of catching the disease.

In the early stages a cure is frequently obtained if vigorous treatment is conscientiously carried out. In advanced cases, however, a cure is very rare, though the disease can be to a certain extent checked and kept under control by efficient treatment.

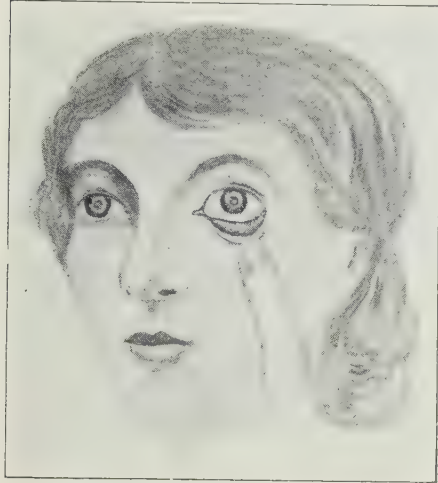
**Treatment** can only be carried out by an experienced eye-surgeon, who can decide from the acuteness or chronic condition of the ailment the strength of the astringent applications he must use. For checking the growth of the tiny granules a solution of silver nitrate (five grains of the silver to the ounce of distilled water) may be painted over the everted lids daily or every second day. To wash away the accumulated matter and generally soothe the inflammation, the eye should be bathed several times a day with a warm boracic solution (ten grains of boracic acid to the ounce of water). In certain cases where the granules are very pronounced, it may be necessary for the patient to be anaesthetised, when the eye-surgeon can destroy with a form of pincers a number of the granules. In the later stages, where there is little or no discharge, a thirty per cent. solution of protargol may be used, instead of the silver nitrate (Jessop),

Should an ulcer threaten to develop on the cornea, this must receive adequate treatment at once. (See CORNEAL ULCER.)

Deficient vision due to inflammation spreading to the cornea and leaving an opaque spot after healing, and deformities of the lids due to shrinking of

their edges are among the late dangers of the disease. Sometimes, where the lower lid has been affected and become mis-shapen, it fails to prevent the tears from flowing over on to the cheek, and the patient has to put up with this added inconvenience.

In addition to the all-important local treatment by the eye-surgeon, the patient's general health must be built up in every way possible. He should lead a quiet, restful life, being out of doors as much as possible in the fresh air, and should have a nourishing and plentiful diet. A course of some bracing tonic such as Easton's Syrup (a half to one tea-



GRANULAR CONJUNCTIVITIS OR TRACHOMA  
From a drawing at Guy's Hospital.

spoonful three times a day, after meals), sometimes has a valuable tonic effect on the whole system. To reduce the burning and pain in the eyes, the patient should constantly wear either smoked or peacock-blue spectacles, which keep out the red rays and the chemical rays of light.

As some defect in vision, by causing eye strain, may have been the initial cause of the development of the disease, the eyes should always be examined before treatment, to see whether any error of refraction is present.

Sometimes through the shrinking of the conjunctival lining of the lids, the edges of the lids may be more or less inverted. The lashes rubbing across the cornea in these cases greatly increase the pain and interfere with the vision. In the late stages the inflammatory condition of the conjunctiva is apt to spread over the upper portion of the cornea, causing greatly reduced vision.

### CONJUNCTIVITIS, OTHER VARIETIES.

Other varieties of conjunctivitis are: (1) *Follicular*, where there are a few reddish little masses of tissue on the lid-linings, (2) *Membranous Conjunctivitis*, in which a membrane forms on the conjunctiva, and (3) *Phlyctenular*, in which little flat, pinkish-yellow growths of tissue develop on the conjunctiva close to the cornea.



EYELASHES TURNED INWARDS IN  
GRANULAR CONJUNCTIVITIS

**Follicular Conjunctivitis** is a condition sometimes confused with trachoma, but by no means so serious. It is frequently found in run-down children or young adults. Here, instead of the quantities of sago grain nodules, there are small darker-coloured little mounds of lymphatic tissue scattered over the lid linings. Here again the surgeon may apply silver nitrate, or other astringent lotions may be needed. At the same time special attention should be paid to building up the patient's general health. Follicular conjunctivitis is not uncommonly found in children who have enlarged glands in the neck, adenoids, or enlarged tonsils. The bracing tonic treatment suggested under adenoids (page 35) should be carried out here as well.

**Membranous Conjunctivitis** is characterised by the formation of a membrane more or less tightly adherent to the conjunctiva. It is very frequently a symptom of diphtheria, and no time should be lost calling in a physician to diagnose and treat this very dangerous condition.

**Phlyctenular Conjunctivitis.** Here little flat mounds of pinkish-yellow tissue develop not on the lid linings, but on the conjunctiva covering the white



PHLYCTENULAR CONJUNCTIVITIS

of the eye close up to the edge of the cornea. The patient may complain of gritty feelings in the eye, aversion to light, the constant formation of tears. Frequently the lids are stuck together when he wakes up in the morning. The ailment is most commonly seen in tuberculous or strumous, run-down children, debilitated from improper or insufficient feeding, measles, whooping cough, adenoids, or unsanitary surroundings.

The pinkish-yellow mass or masses may last for a week or more. Sometimes they appear in crops.

**Treatment of Phlyctenular Conjunctivitis.** The eye should be bathed three or four times a day with a warm solution of boracic acid, ten grains to the ounce. In addition, a little weak yellow oxide of mercury ointment (two to three grains to the ounce) should be applied to the conjunctival surface once or twice a day. The ointment should be slightly softened by holding it for a moment before a fire, and then a little of it should be taken up on a clean, new, fine paint brush, and gently painted along the inner surface of the lower lid, which has been gently drawn away from the eyeball, by pulling on the lower lashes. The eye should then be closed, and gently rubbed with the finger until the ointment is spread over the whole eye. If any of the little growths extend to the cornea itself, or even its margin, atropine may be necessary to dilate the pupil.

Seeing that phlyctenular conjunctivitis is the direct result of a seriously lowered state of health, a general tonic treatment must also be carried out. This is fully as important as any local measure. An abundance of fresh air





DR. MACCALLAN OPERATING ON AN OPHTHALMIC PATIENT IN THE OPEN AIR



Boyer

THE EGYPTIAN TRAVELLING OPHTHALMIC HOSPITAL TENTS SET UP AT MEDINA-EL-FAYUM

Ophthalmic diseases, especially Granular Conjunctivitis (which is known as Egyptian Ophthalmia) are so rampant in Egypt that a travelling hospital, under the charge of a London oculist, Dr. MacCallan, has been established, largely owing to the generosity of Sir Ernest Cassel. Motor transport is used.

and sunlight, plenty of plain, nourishing food, and plenty of sleep are essentials here. If there is any indigestion or constipation, this should be corrected. Here again an iron and strychnine mixture, such as Easton's syrup, 15 to 30 drops three times a day after meals, for a child of eight to fifteen years of age, is often most useful. The eyes should be constantly protected from artificial light and sunlight by smoked or blue glasses. A course of cod liver oil, if it does not cause indigestion, may be given in place of, or in addition to the iron tonic. The child should not be allowed to read or study, or make any close use of his eyes until all signs of the disease have disappeared.

**CONSTIPATION OR COSTIVENESS** is a term used to describe the absence of a daily movement of the bowels.

**Causes** may be general or local. The commonest in the first-class are :

- (1) An hereditary disposition to constipation.
- (2) Sedentary habits, particularly in people who "do themselves well" and eat largely of rich, meaty foods.
- (3) Chronic diseases, such as anæmia, diabetes, chronic liver affections ; and,
- (4) Improper dieting.

The diet may be either too coarse, leaving a too bulky, spongy residue in the bowel, or it may be too concentrated. In the latter condition there is not enough residue to stimulate the bowel walls to carry out their normal constant contractions, which move the digesting food along the intestinal tract.

Any temporary stoppage of the liver's bile-forming functions may also bring on constipation. The neglect of drinking a sufficiency of water during the day, and excessive hardness of the drinking water are other common causes.

Local causes include (1) weakness of the circular muscle fibres, which are embedded in the walls of the intestines ; (2) weakness of the muscles over the abdomen ; (3) pressure on the bowel by tumours, either benign or cancerous ; and (4) contraction of the bowel due to spasm.

**Symptoms.** Dull headaches coming on in midmorning, lassitude, general weakness, bad breath, loss of appetite, and coated tongue, are the ordinary symptoms of chronic constipation. There may be slight swelling of the abdomen, with perhaps colicky pains, and hæmorrhoids, or piles, are apt to develop.

It should not be forgotten, however, that constipation may be present for many months while the patient to all intents and purposes is enjoying perfect health. For this reason many people, particularly women, and those whose business duties claim them early in the morning, often neglect what is one of the most important actions of the day, the morning emptying of the bowel.

A not unusual symptom due to the irritation set up in the bowel by impacted masses of waste matter is a chronic slight diarrhœa. When diarrhœa persists in a person who for years has been troubled by constipation, an examination should be made by a physician, as it may be that only a small passage-way is left through the bowel, hard, stone-like masses completely blocking up the rest of the opening.

**Preventive Treatment.** The habit of going to the closet and making a serious attempt at least, to have the bowels move directly after breakfast regularly every morning is the best preventive of all against constipation. Nothing should be important enough to cause the postponement of this essential duty. If in addition to this unalterable habit one eats a moderate amount of an ordinary mixed dietary, with some fruit at breakfast, takes a moderate amount of outdoor exercise, and drinks at least two pints of water between meals, there is little danger of developing a constipated habit.

**Active Treatment.** If constipation is already a habit, the first step in treatment is to look for the presence of one or more of the general causes named above, and remove this. Try taking more outdoor exercise, cutting down any excess of food, if a heavy eater, or eating more if a very light eater. If any disease, such as anæmia or diabetes is present, seek treatment for this at once. Where general weakness of abdominal muscles, or the muscles of the intestinal walls is suspected, more outdoor exercise, walking or riding, etc., will help bring them back to a normal tone. For this variety of constipation five minutes rolling a croquet ball round and round over the bare abdomen when lying on one's back in bed in the morning, affords a very efficient massage treatment.

The diet in this variety of constipation should include plenty of green vegetables, together with salads, "standard," or brown bread, and a coarse meal breakfast porridge. Stewed figs or prunes at breakfast should be taken daily unless one can obtain fresh fruit.

Milk and Ceylon teas and wines in general are constipating, and should be avoided. Myriads of drinking waters have been recommended, but the chief essential in these is that they should be soft. Many men of a slightly constipated habit find that the simple prescription of a large cup of sweetened coffee with plenty of milk at breakfast, immediately followed by a pipe or a cigar, will ensure a thorough action of the bowels.

**Drugs in Constipation.** The question of drugs to be used in chronic or habitual constipation would require a book of its own for a thorough review. The salts probably have the least harmful effect on the system.

Below are a number of common aperients which may be tried in turn in chronic constipation. In this way the drugs do not lose their force as commonly happens when the same preparation is used continuously.

*Sodium Sulphate*: A teaspoonful in a little hot water, drunk slowly first thing on waking in the morning.

*Phosphate of Soda*: A teaspoonful, taken in the same way.

*Sulphate of Magnesia*: A stronger aperient but more salty in taste. A teaspoonful taken in the same way.

*Castor Oil*: A useful aperient when the bowels have not moved for two or three days. May be taken in doses of one or two tablespoonsful, first thing in the morning.

*Confection of Sulphur*, especially when mixed with equal portions of confection of senna, is a favourite mild laxative for those suffering from piles or other irritable condition of the lower bowel. Dose : One teaspoonful of the mixture at bedtime.

*Cascara Sagrada* : Two to four grains of the dry extract to be taken at bedtime.

*Aloes*, and its active principal aloin, are useful when purgatives must be taken over a more or less prolonged period.

The following aloin pill, taken daily after dinner every day for a month, no matter whether the bowels have moved that day or not, will sometimes entirely cure a long-standing habit of constipation. During the treatment the patient must, of course, follow the suggestions given above as to diet, water drinking, outdoor exercise, etc.

℞	Aloin	..	..	..	..	..	1	grain
	Extract of nux vomica	..	..	..	..	..	1	"
	Extract of belladonna	..	..	..	..	..	1	"

To make one pill. Make thirty pills. One pill to be taken daily, after dinner, for a month.

Another favourite prescription is liquid extract of cascara sagrada. The chronic sufferer from constipation may take thirty drops nightly for a fortnight, and then gradually reduce the amount until only ten or even five drops nightly are required. Finally, even this moderate dose may be left off when the bowels have become accustomed to the habit of acting regularly every morning.

The secret of success in this treatment is utmost regularity in taking the drug. If taken for a few nights and then discontinued, no permanent cure can be hoped for.

When the lower bowel has become clogged up with accumulated waste matter, an enema of one half to a pint of plain water, soapy water, or glycerin and water (an ounce of the glycerin to the pint of water) injected into the lower bowel through a syringe will give much more satisfactory results than drugs by the mouth. Such injections or enemata should, however, not be used with any frequency, as in the end they tend to lessen the bowel's normal activity.

In still more stubborn cases an injection of pure olive oil (a quarter to half a pint may be given), or one of a pint of water to which has been added one or two tablepoonsful of turpentine may be given to loosen the impacted waste matter. (See ENEMATA.)

For a middle-aged person in whom sluggishness of the liver is the cause of occasional constipation, the following pill will be found useful :

℞	Calomel	..	..	..	..	..	1	grain
	Podophyllum resin	..	..	..	..	..	1	"
	Pill of colocynth and hyoscyamus	..	..	..	..	..	2	grains

Mix. To make one pill. Take one pill just before going to bed.





MECHANICAL MORTAR AND MIXER



BOTTLING MEDICINAL MINERAL WATERS



STERILISING CATGUT THREADS



PREPARATION OF BENZOATE OF SODA AND THE SALTS OF POTASH

# THE MANUFACTURE OF DRUGS

Photographed in the laboratories of the Central Pharmacy of France.

Boys

**CONSTIPATION IN CHILDREN.** Infants and young children stand purgative drugs badly, so every effort should be made to correct the trouble by dieting.

It may be that not enough fluid is being given. A drink of plain water (previously boiled and then cooled) taken between meals may be all that is needed. Whether at the breast or on the bottle, a teaspoonful of cream given directly after each feeding may supply the necessary lubricant.

If the constipation has lasted for some time, it will probably be noted that the abdomen protrudes and feels doughy to the touch from the collection of waste materials in the lower bowel. It is necessary to get rid of these collections first before the bowel's movements can be brought back to daily regularity by dieting. An injection into the rectum of half a pint of warm water to which a little soap has been added, or a teaspoonful of glycerin is usually sufficient.

To train the bowels into normal regularity when once constipation has become the habit, nothing gives better results in infants and young children than the liquid extract of cascara. To a half teaspoonful of sugar and water add five to ten drops of the liquid extract of cascara, and give it to the child last thing at night. If the resulting movement the next morning is too copious or insufficient, the dose may be decreased or increased. The result aimed at is not to produce a diarrhœa-like complete flushing out of the bowels, but rather a gentle normal movement. When the amount of the drug sufficient to produce this has been determined by experience, let the child have this dose nightly for two or three weeks, and then gradually reduce the amount, finally withholding it altogether. Another useful aperient for infants and children is olive oil, a half to two teaspoonsful, according to age, given last thing at night.

If the little patient has passed babyhood, and is on a solid diet, much can be done to overcome constipation by attention to the diet. Milk between meals is a common cause of constipation here. Porridge for breakfast, with standard or brown bread and stewed fruit twice a day, and plenty of drinking water (not milk) between meals, will usually correct a moderate tendency to constipation, particularly if the child is made to go to stool immediately after breakfast whether he feels an inclination to do so or not. This forming of the habit of attending to the call of Nature immediately after breakfast is the foundation of health in after-life, and is one of the most important of nursery teachings. Castor oil one to two teaspoonsful, ten to twenty drops of the liquid extract of cascara, one or two grains of the solid extract of the same drug, and confection of sulphur (half a teaspoonful at night) are other useful purgatives in childhood. Aloes, calomel, and the stronger salts are not advisable in children.

For the bottle-fed infant a small piece of manna added to the evening bottle often acts as an effective yet gentle aperient.



DRUG MANUFACTURE—PREPARATION OF ALKALOIDS BY MACERATION AND FILTRATION



DRUG MANUFACTURE—CRYSTALLISATION OF SULPHATE OF MAGNESIA  
Photographed at the laboratories of the Central Pharmacy of France.

Boyer



**CONSTITUTION OR DIATHESIS.** Variations of the bodily constitution among different people explain why some are predisposed to certain diseases, while others apparently resist these, but are perhaps liable to other diseases from which the first are comparatively secure. This variation may depend on differences in heart, lungs, kidneys, liver, stomach, nerves, brain, blood, skin, or other component parts of the body.

A person's constitution is frequently inherited from his parents and transmitted to his children. Of course, marriage with a person of a different constitution tends to dilute the traits of both parents as they appear in the children, and in the course of a few generations these may become entirely eliminated. When a tendency to any disease such as gout, for instance, is inherited, it may often be subdued by careful living.

Besides tendencies to suffer from certain diseases and immunity from others, a person's constitution may render him extremely sensitive to the action of certain drugs, or, on the other hand, less sensitive than the average person.

Knowledge of these characteristics is useful to the person himself, enabling him to avoid the occurrence of diseases and bodily disorders to which he is specially liable. It is indispensable to the doctor's successful treatment of many diseases.

Constitutions may be roughly classified under certain headings as follow. Exceptions to the rule, however, are numerous.

Those of a gouty constitution are generally rather stout, their hair is very frequently dark in colour, their faces are inclined to become red, and their hands and feet are usually of small size.

The person of rheumatic constitution is most commonly large-boned with prominent features, sensitive skin, and a tendency to perspire profusely.

People of a nervous constitution are usually rather fragile of build, with slender bones, bright eyes. They are alert in movement, and emotionally excitable.

A phlegmatic constitution is indicated by heavy build, dulness, and slowness of movements, pale or yellowish skin, and cold extremities.

The syphilitic constitution inherited from a diseased parent is sometimes shown by small size and poor development, defective teeth, dull eyes, and sunken nose.

The ailments to which these classes are most prone are as follow :

*Gouty* constitution. Gout, apoplexy, and disease of any bodily organs

*Rheumatic.* Rheumatism in any of its forms, and diseases of the heart in childhood, St. Vitus's dance.

*Nervous.* Nervous diseases and disorders of the digestive system.

*Phlegmatic.* Infectious and chronic diseases.

*Syphilitic.* Exceptional liability to various diseases.





THE OPEN-AIR TREATMENT OF CONSUMPTION: PATIENTS IN THE GROUNDS OF THE NATIONAL SANATORIUM AT MIDHURST

**CONSTITUTIONAL DISEASES.** Under this heading are grouped a large number of diseases, including ARTHRITIS DEFORMANS (RHEUMATOID ARTHRITIS), HÆMOPHILIA (BLEEDER'S DISEASE), DIABETES, GOUT, LITHÆMIA, OBESITY, PURPURA, RICKETS, and SCURVY.

**CONSUMPTION** is the common name for tubercular disease of the lungs, called also tuberculosis or pulmonary phthisis.

The tubercle germ may attack many parts of the body, as, for example, the glands in the neck, the bones, the coverings of the brain, or the skin (lupus); but the term "consumption" is usually confined to tuberculosis of the lungs with its accompanying symptoms of wasting, fever, night sweats, cough, and increasing weakness.

**Causes.** The cause of consumption is always the tubercle bacillus, a minute organism which was discovered by Professor Koch in 1882. While this organism may find an entrance into the system and finally settle in the lungs from the eating of tuberculous meat, or the drinking of tuberculous milk (or even through a wound in the skin), much the commonest source of infection is from breathing into the mouth or nose passages germs floating in the air.

The expectoration of a consumptive may be laden with millions of virulent germs, and when such expectoration dries on the ground, or on the floor, the germs still live for a considerable time. Clinging to dust particles, they are carried about in the atmosphere, perhaps finally being drawn into the air passages of some other person.

These germs remain alive and virulent for months, particularly if protected from the bright sunlight ; hence the necessity of keeping the rooms in which a consumptive lives as full of sunlight as possible.

Dust, it should be remembered, when scattered about the rooms in sweeping, is a very common means of spreading the disease ; so the person who has to look after the rooms of a consumptive should always wear a light muffler covering the nose and mouth when sweeping. Instead of sweeping, cleaning should be done when possible with a damp cloth, which can be wrung out from time to time in a five per cent. solution of carbolic acid and water.

Although the tubercle germs usually find their first resting-place in either the nostrils or the throat, the disease does not always settle itself in the lungs. Sometimes the glands in the neck become attacked, the germs being absorbed through the tonsils ; or, again, the vocal cords may be invaded. It is rare for the vocal cords, however, to be affected unless the lungs are already diseased. Tubercular glands and tuberculosis of the larynx are described under these separate headings.

**Prevalence of the Disease.** Despite the many anti-tuberculosis crusades which have been waged in all parts of the country for the past fifteen years, tuberculosis is still one of our commonest as well as most deadly diseases. Fifty thousand people annually die from it, another hundred and fifty thousand are disabled by it, and perhaps half a million more are carrying about in them the seeds of the disease. One person in every eight throughout the world dies of tuberculosis in some form or another.

**Predisposing Conditions.** Apart from the actual exciting cause (the tubercle bacillus, which *must* be present), there are a number of other factors which play important predisposing parts in bringing on the disease.

*Age.* The beginning of adult life is the commonest time for consumption of the lungs to show itself. In infants and children, tubercular attacks are more likely to be located in the glands either of the abdomen or about the neck.

*Heredity.* While the disease is never directly handed down from parent to offspring in the manner in which the syphilitic taint may be inherited, many physicians hold that a "predisposition" to contract the disease (if placed under circumstances in which contagion is likely) occurs in the children of consumptives. Much more important than heredity, however, is the influence of environment.

*Environment.* As the disease is very infectious, or "catching," it stands to reason that children or young people living in the house with parents or other relations suffering from consumption are much more likely to contract it than those living in healthy homes. Every time the advanced consumptive coughs or expectorates, he is exposing those about him to the possibility of attack from the myriads of bacilli he is scattering about. The greater likelihood of the near relations of consumptives developing the disease from

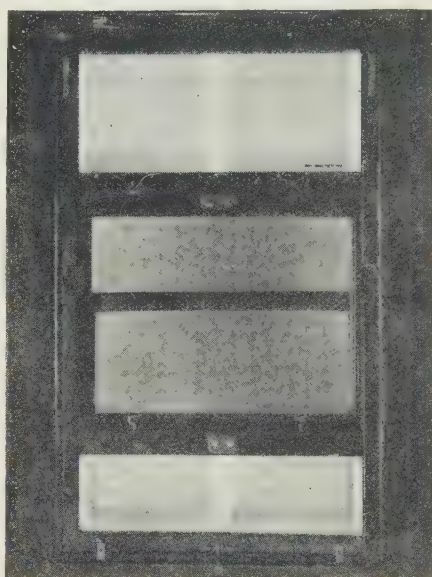
this cause largely accounts for the at one time commonly accepted belief that the disease was inheritable.

Apart from living in close contact with a consumptive who expectorates and coughs without taking precautions to minimise the danger to his companions, ill-ventilated, dark, and dirty living or working rooms all conduce to the disease by lowering the system against the stray tubercle germs which are always finding their way into our noses or throats.

The germs are everywhere, and few of us escape breathing them into our air passages at one time or another. The person, however, who sleeps in a well-ventilated bedroom with a window always open at night, who gets a moderate amount of outdoor fresh air and sunlight, and whose living and work-rooms are always well-aired and ventilated, will as a general rule be able to ward off the attacks of the germ. The tubercle bacillus finds an inhospitable soil in such a person's nose or lungs, and so, being unable to flourish and develop, speedily dies. If, on the other hand, the individual lives in a dark, stuffy, and ill-ventilated house, does his work under the same conditions, and starves his system of oxygen by sleeping with his bedroom windows closed, any tubercle germ which chances to settle in his body will find a suitable soil, immediately multiply and develop, and consumption speedily results.

The workers in certain trades are particularly open to consumption. Potters, file-makers and cutlers, etc., who work in an atmosphere of flying, fine particles of clay or metal (which they breathe into their lungs), show a heavy mortality from consumption. Tailors and weavers, who get little outdoor exercise, and who often work in stuffy, ill-ventilated rooms, are more than ordinarily subject to the disease. On the other hand, farm labourers, game-keepers, etc., who spend most of their days in the open, and so get a maximum of fresh air and sunlight are, as one would expect, relatively free from the disease.

Alcoholism leaves one more than ordinarily open to tuberculosis of the lungs or consumption. Barmen and brewers' assistants have a much greater susceptibility to the disease than have, for example, workers in the grocery trade.



A PATENT WINDOW ADMITTING AIR BUT NOT DUST

Exhibited at the Anti-Tuberculosis Exhibition. The window can be kept open permanently, gauze blinds on spring rollers preventing ingress of dust.



**VARIETIES OF CONSUMPTION.** Three forms of tuberculosis of the lungs are described :

1. *Acute Miliary Tuberculosis*, in which, through the germs getting into the blood, and so being carried to all parts of the system, many other organs as well as the lungs are attacked. This variety is practically always fatal, death often occurring within a month of the onset.

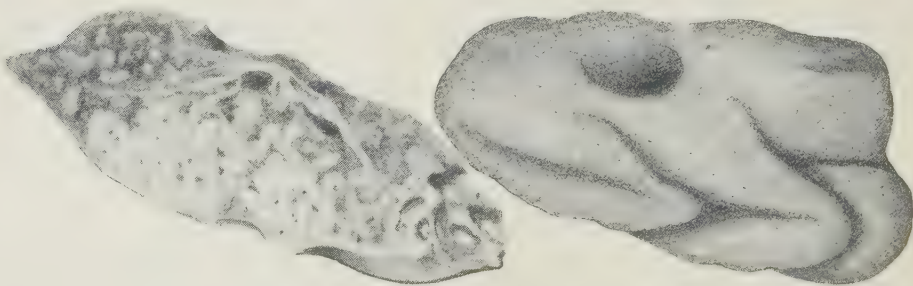
2. *Ordinary Consumption*. The great majority of cases take this form. The disease comes on gradually, the patient perhaps not realising he is really ill until well on in the course of the disease. The lungs, as a result of the development of the germs in them, become more or less solidified with collections of specialised cells, called "tubercles," forming in various parts. These later break down into a cheesy consistency, destroying portions of the lung itself and leaving cavities in the lungs. The disease may last for two or three years, or the breaking down of the lung and the cavity formation may develop more rapidly, death resulting in from three to six months (galloping consumption).



A TUBERCLE BREAKING DOWN  
A microphotograph (magnification 130 times) showing a tubercle in normal tissue breaking down and so going to form one of the "cheesy masses" typical in tuberculosis of the lungs.

3. *Fibrous Consumption*. Whenever the tubercle bacillus attacks the system, Nature immediately tries to protect the neighbouring parts by the formation of fibrous tissue to hem in the invading germ. Sometimes, where the vitality of the patient is greater than the vitality of the attacking germ in the lungs, the disease may be totally arrested, the different points of infection becoming totally hemmed in and walled off from the rest of the lung by fibrous tissue. In this way, starved of nutriment, the invading germs die and the patient recovers.

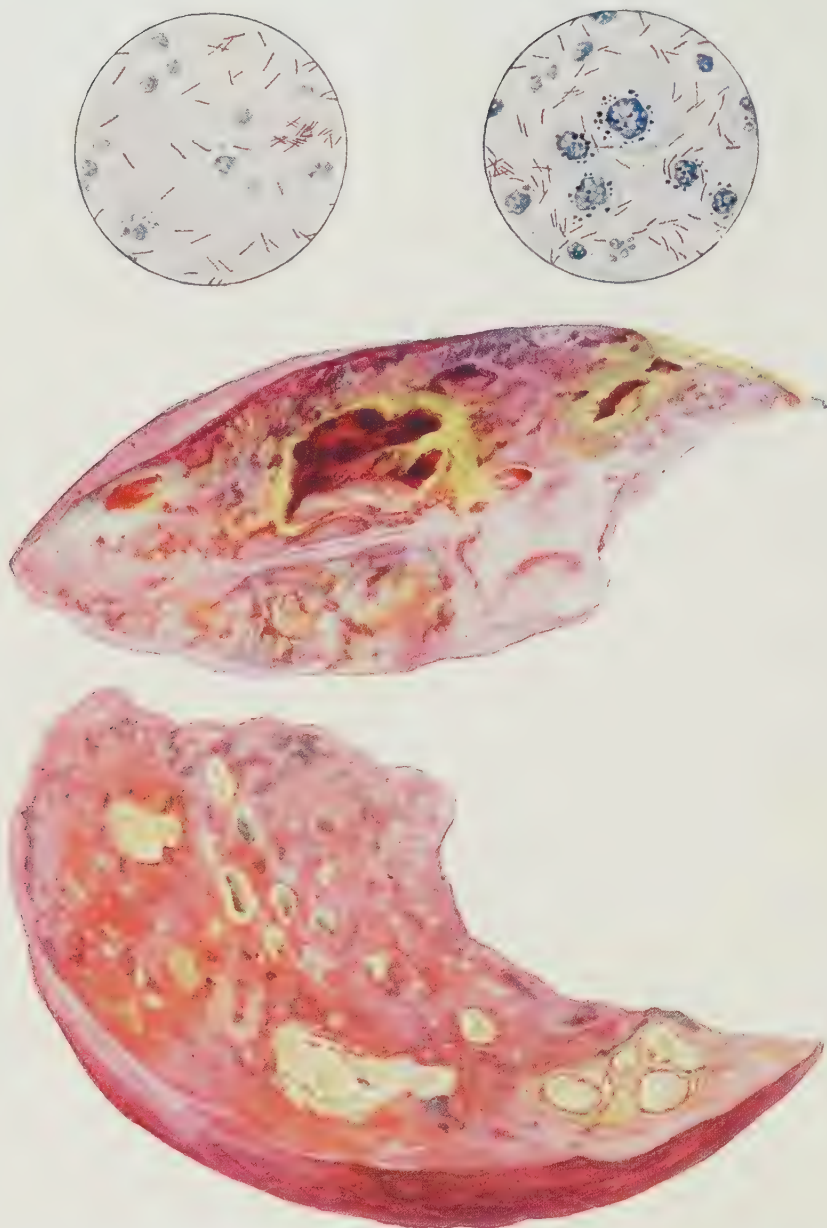
**Symptoms.** Persistent slight cough, with no expectoration at all at the start, may be the earliest sign. The patient may notice that, without getting



TUBERCULOUS TISSUE SHOWING CAVITIES AND "CHEESY MASSES" AND HEALTHY LUNG TISSUE  
From drawing in Guy's Hospital Museum.







## THE BACILLUS OF CONSUMPTION AND ITS EFFECTS ON LUNG TISSUE

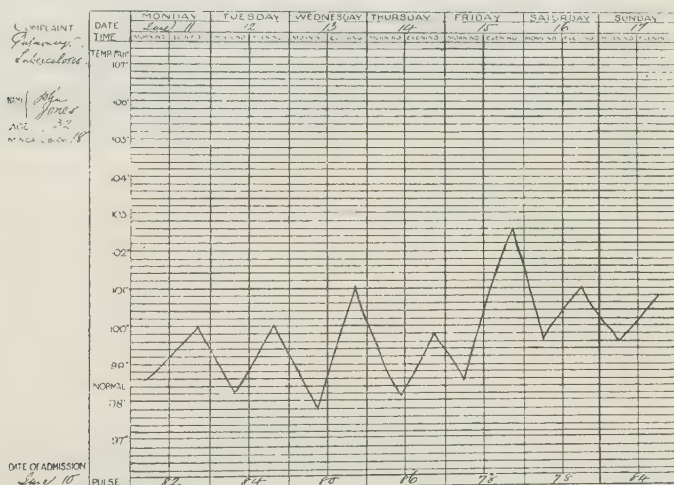
Above on the left is a micro-photograph showing tuberculosis bacilli (stained red) in sputum. On the right the same bacilli are shown in lung tissue (the bodies stained blue being blood corpuscles). Below are two sections of lung tissue showing the ravages of the tubercle bacilli. These sections show clearly the solidification of lung tissue with the formation of typical "cheesy masses," which break down and leave the cavities (shown in the upper section), that follow the development of bacilli.

The sections are from drawings in the Gordon Museum, Guy's Hospital.

any worse, his cough stays with him, resisting all his efforts to throw it off. Later the expectoration becomes more profuse, and the patient may notice occasional streaks of blood in it.

It is a safe rule that whenever blood is coughed up from the lungs the patient should at once present himself to a physician for examination of the lungs.

Early in the disease the patient may notice that he is not as strong as he was, he has less energy, his appetite is not so good, and he is getting thin. He finds that any little exertion, such as walking up a few stairs, makes him puff and blow. Again, he may notice a tendency to sweat at night in bed. This latter is another very important early symptom which should lead the patient without delay to a doctor for examination. Another tell-tale symptom, which, however, the patient rarely notes for himself (because his attention



A TYPICAL CHART OF THE TEMPERATURE VARIATIONS IN CONSUMPTION, SHOWING THE RISE EVERY AFTERNOON

is not directed to it), is a slight afternoon rise in temperature. It may not be great, but even a degree, to  $99.2^{\circ}$ , noticeable every afternoon, is a grave sign.

During this early stage of the disease the tubercle bacilli which have settled in various parts of the lung (most commonly at one apex underneath the collar bone) have not actually destroyed any of the tissues, hence there is little or none of the profuse, creamy, purulent expectoration inevitable in the later stages. This begins as soon as the solidified patches in the lungs start to break down, forming cavities as a result of the continued local action of the germ. These cavities open up into the air tubes in the lungs, and the constant cough which now develops is Nature's effort to throw up the expectoration which is the result of the local inflammation and but rarely contains much lung tissue. The popular idea that expectoration is lung tissue and that the more expectoration the more rapidly is the lung breaking down is erroneous.

From now on the symptoms increase in severity. The loss of appetite, loss of weight, afternoon fever and night sweats are all more marked, and the patient steadily goes downhill. In the latter stages other parts of the system are very apt to become affected. The disease may spread to the larynx, causing huskiness or loss of voice, or the bowels may be attacked, setting up severe and intractable diarrhœa.

As the disease in the lungs extends the fever assumes more and more of a hectic type—that is, rising to three or four degrees above the normal at one part of the day (usually the afternoon) and a few hours later falling to a degree or more below the normal. Very frequently, through other varieties of germs finding their way into the lungs, what is termed a “mixed infection” is set up. The expectoration becomes even more profuse and the cough more wearing now that several varieties of germs are attacking the system.

When once cavity formation has reached anything like an advanced stage an actual cure is very rarely obtained. Too often the patient goes gradually downhill, though the fatal termination may be postponed from two to five years or more, under certain conditions.

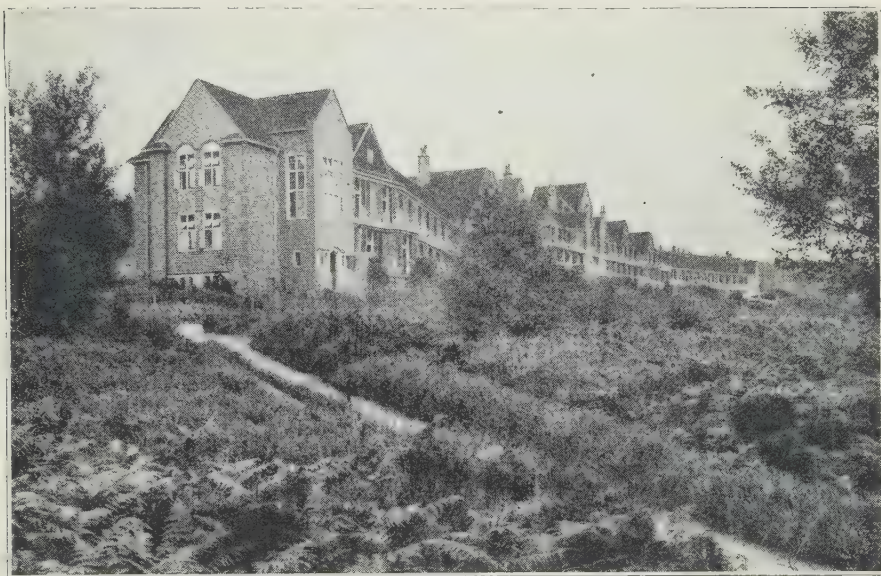
**Preventive Treatment.** No disease is easier to avoid than consumption, if one is willing and able to follow out a certain few simple rules of hygiene. (Latham.) In the first place, one should neither spit on the floor or the street or anywhere else where the expectoration may dry and the contained germs, if any, may be mixed with the dust which abounds everywhere and so carried into the throat or nostrils of some other person.



GENERAL ENTRANCE TO THE NATIONAL SANATORIUM AT MIDHURST

Frith





THE NATIONAL SANATORIUM FOR CONSUMPTIVE PATIENTS AT MIDHURST

Frith

Secondly, public opinion should be so strong against the indiscriminate spitting that even those who cared nothing for the public health would be forced to adopt more cleanly habits. The recent law making consumption a compulsorily notifiable disease will go an immense way towards stamping out the scourge in this country, because now a closer track can be kept of the doings of consumptives, and they can be made to take proper measures to protect their fellows.

Whoever feels that on account of his cough, whether consumption or not, he must occasionally expectorate, should be forced to carry a sputum or flask cup which can be got from any chemist or hospital which treats lung diseases. A few drops of some disinfectant are carried in these flasks so that the germs in his expectoration are kept moist (and so not converted into dust), and gradually killed.

To protect the rest of his household the consumptive should have his own table cutlery, plates, napkins, etc., and no one should use his towels or sleep in the same room with him. Beyond this if the consumptive will use his sputum cup and refrain from indiscriminate spitting and cough into his handkerchief, there is no reason why he should be the slightest danger to the rest of the household.

A house harbouring a consumptive should be always well-ventilated, and curtains and window hangings should be reduced to a minimum, so that no available sunlight (Nature's best germ-killer) may be kept out of the house.

It is not necessary that the consumptive's bed-linen or underlinen should be washed by itself, provided that his handkerchiefs and pillow slips are soaked for some hours in a solution of carbolic acid (one part of carbolic to twenty parts of water) before being sent to the wash.

The best preventives against consumption are plenty of outdoor exercise, good food, well-ventilated and sunny workrooms, and a wide-open bedroom window at night. Narrow-chested, overgrown, delicate young adults (who are particularly prone to the disease) should make a point of giving up indoor sedentary occupations if possible, getting outdoor work instead.

**Treatment** depends on the stage of the disease. Broadly speaking, if the patient has night sweats and any fever, he should be kept in bed. On the other hand, if the disease is in a quiescent stage, the best chance of cure lies in the "graduated work" system.

The patient who learns from his doctor that the tubercle germs are at work in his lungs, although he feels fairly well and has no fever or night sweats, should, if he is so circumstanced that he can devote himself entirely for the next few months to stamping out the disease, put himself on the following regime :

8 a.m. A cup of tea should be brought to the patient, or a beaten-up raw egg.

8.30. The patient rises, takes a tepid bath or sponge, and a good rub down afterwards.

9 a.m. Breakfast consisting of fruit, fresh eggs, fresh fish, raw or under-done meat, a little cold ham, toast, milk or cocoa, marmalade. etc. New bread, sausages and bacon are best avoided.

9.30 to 10. Patient should rest in a comfortable chair in the open air or by an open window.

10 till 12. Exercise or "work." This may consist of slow walking on the level, or doing light gardening. Anything which keeps the mind interested while the muscles are getting moderate but not too violent exercise.

12 to 1 p.m. More rest in a steamer chair or on couch in open air.

1 p.m. Luncheon, with meat soup, boiled fish, or chicken, raw or under-done steak, vegetables, milk puddings, milk or buttermilk, stale bread or toast and butter.

1.30 to 2 p.m. Absolute rest.

2 to 4.30. Exercise or work in the garden.

4.30. Tea, with plenty of bread and butter and with milk.

5 till 7. Rest, either indoors or outdoors, according to the weather.

7 p.m. A light meal, similar to lunch.

9 p.m. Bed.

If the patient does not sleep well, a drink of hot milk at bedtime often induces quiet slumber.



A LADY PATIENT WHEELING RUBBISH



AN OPEN-AIR WATER FILTER



PATIENTS AT WORK IN THE WOODS

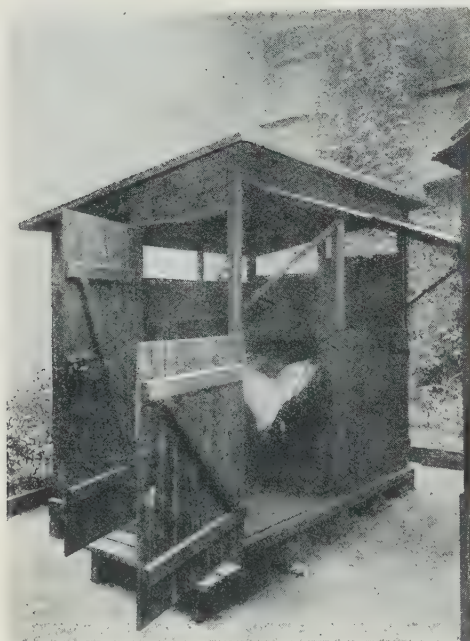


LADY PATIENTS CARRYING OUT COMPARATIVELY HEAVY TRENCHING WORK Clarke

THE TREATMENT OF CONSUMPTION BY WORK AT THE BROMPTON HOSPITAL SANATORIUM AT FRIMLEY

When consumption is in the quiescent stage the best chance of cure lies in the "graduated work" system.





A GARDEN SHELTER WHICH CAN BE CLOSED IN  
BAD WEATHER

As exhibited at the Anti-Tuberculosis Exhibition.

nights. After a few nights he will find that he is perfectly comfortable, even when the weather gets colder. Nothing but heavy fogs or rain need drive the patient indoors to sleep when once he has become acclimatised to sleeping outdoors in a shed.

The effects of the excess of fresh air gained in this way are often very noticeable. The hectic flush, the pallor, the irritating cough, and the tendency to night sweats often immediately pass off. If the patient cannot sleep in the open his bedroom should be as simple as possible, with all hangings which might exclude the air removed from the window. The bed should be placed across the open window, so that the

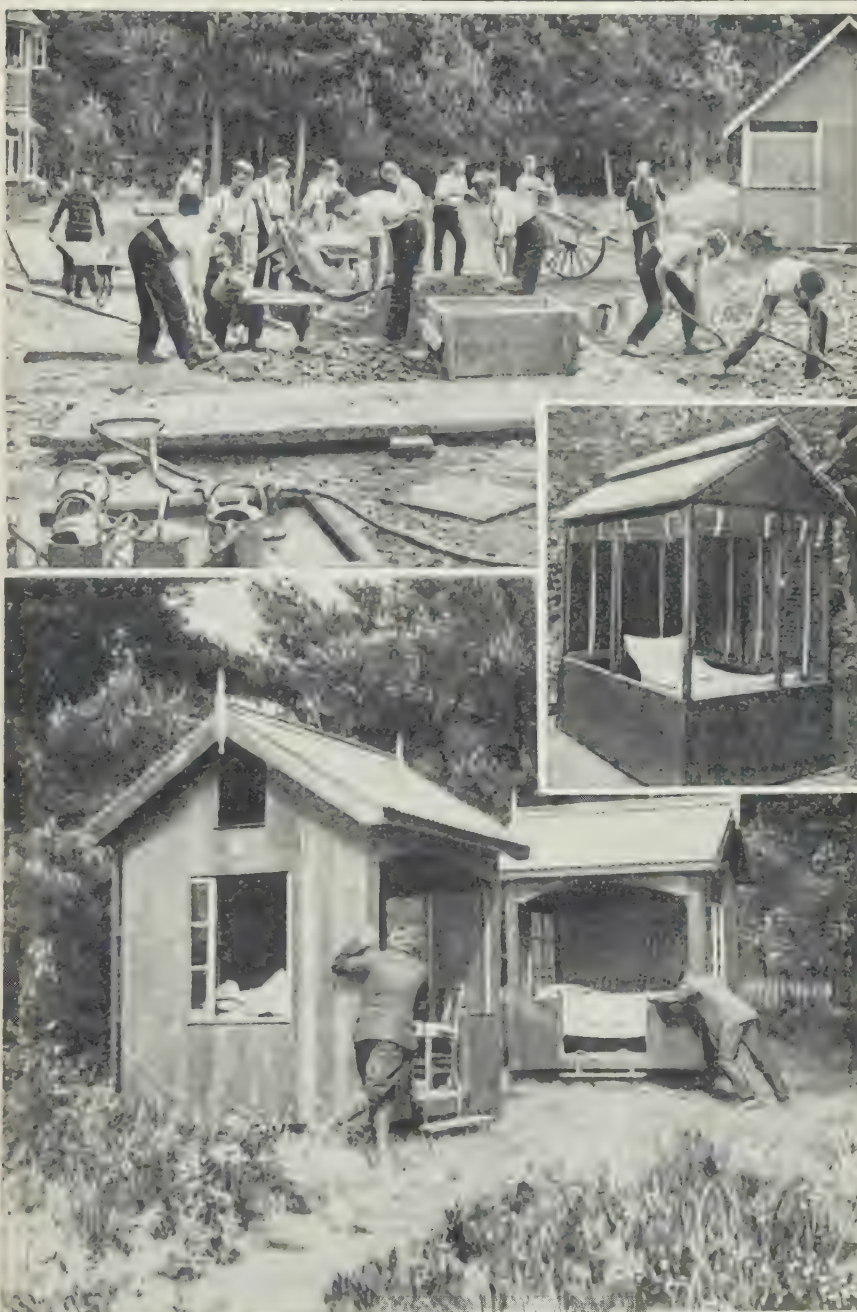
Smoking, if it increases the cough, should not be allowed. Alcohol, with the exception of beer or light red wine, should not be taken except under a doctor's orders. The patient's diet should be generous, but he should avoid absolute stuffing, for while this puts on flesh the new tissue is flabby and the patient is no better for it.

The maximum of fresh air both in the daytime and at night is required by the patient, whether in this quiescent stage of the disease or in the more advanced stages. If a shelter with a well-boarded damp-proof floor can be arranged in the garden, the patient should begin by sleeping out of doors on fine



AN OPEN-AIR BEDROOM AT MIDHURST





# THE OPEN-AIR TREATMENT OF CONSUMPTION

Above sanatorium patients are seen who have progressed so greatly that they can work full hours. On the right is an open-air shelter with venetian blinds to adapt the shelter to change of weather and wind. At the bottom patients are seen moving their shelters to meet a change in the wind.

Photos by Clarke, Underwood & Newspaper Illustrations.

patient sleeps with the wind on his face. Draughts, of course, should be avoided, but the window should never be shut unless there is a driving rain or heavy fog.

The amount of exercise or work the patient may do in a day depends on his condition, and must be carefully supervised by the physician in charge of the case. If the patient feels tired after his exercise, or his breathing rate is increased, or an evening rise of temperature comes on, he is doing too much. (Latham.)

The failure to gain in weight is another sign that the patient is over-exercising. Particular care must be taken to avoid chilling after perspiring.

A shelter can be made very simply out of a few boards in the garden. It should be varnished inside, painted outside, and roofed with rubberoid. The shelter should face south-west and should have swinging doors, so that the whole of the front may be thrown open. The roof should slope downwards, from the front to the back, so that no cul de sac be left for the collection of the polluted air the patient breathes out.

Only if the rain is actually driving in the open front of the shelter need the patient desert it, and then his bed should be put before an open window on the side of the house which is sheltered from the rain.

Where there is continuous or even intermittent fever (even if only a degree above the normal, 98.2 degrees), absolute rest is the first essential. The patient should be in bed, and should not be allowed to get up for any cause whatsoever. His bed should be either before an open window or, better still, in a garden shelter, as suggested above. It is important for the bedridden consumptive to keep the skin active. Sponging with tepid water, or water with eau de Cologne added, gives a feeling of freshness to the patient, and has a tonic effect on the whole system.

**Drugs.** The most useful of all medicines in consumption is cod-liver oil. This may be taken (unless it upsets the digestion) as the pure oil, in doses of one to three teaspoonsful after meals, or one of the many good emulsions on the market may be taken in tablespoonful doses. Of the innumerable drugs which used to be advised in consumption, few are prescribed nowadays, as they have been proved to be practically valueless in stopping the ravages of the tubercle bacillus, and only too frequently they upset the digestion.

One, however, which has to a certain extent stood the test of time, is creosote. The following prescription is often useful in quieting the cough, reducing the amount of expectoration, lowering the temperature where fever persists, and checking night sweats :

R						
	Purified creosote	..	..	..	..	2 drachms
	Spirit of cinnamon	..	..	..	..	4 "
	Orange peel tincture	..	..	..	..	1½ ounces
	Glycerin	..	..	..	enough to make	12 ounces

Mix into a mixture. Take one tablespoonful three times a day after meals.

Carbonate of guaiacol, five to ten grains three times a day after meals, is another favourite creosote preparation. Either of these may be taken for months, while the patient is at the same time building up his general strength and resisting powers with cod-liver oil. The oil may be taken plain or in the form of an emulsion, combined with malt extract. Any chemist can supply these.

Arsenic is another drug which many physicians still believe in, particularly where there is pronounced anæmia. This drug being a strong poison, in any case can only be prescribed by the physician in attendance.

Treatment by injections of Koch's tuberculin in some cases gives excellent results. As, however, the remedy often not only fails to benefit the patient, but may even do him actual harm, unless prescribed by a physician experienced in its use, and who can examine the patient daily, tuberculin treatment needs no further description here.

**TREATMENT OF SPECIAL SYMPTOMS IN CONSUMPTION.** Although few physicians nowadays put much trust in drugs as actual destroyers of the tubercle bacilli in the lungs, the various symptoms which arise in consumption and often cause acute discomfort to the patient may often be



A NORTHERN SANATORIUM, MEATHORP, NEAR GRANGE OVER-SANDS



relieved by proper medical treatment. It should be remembered, however, that no drugs can take the place of abundant fresh air and sunlight as an actual cure of the disease.

**Fever.** This may be due to fatigue, or some upset of the digestive tract. Here, of course, rest, or a dose of castor oil to clear out the bowel, may be all that is needed. Drugs should not be resorted to until the outdoor treatment (sleeping at nights in an open shed as well) has been thoroughly tried. If the fever still persists despite abundant fresh air, guaiacol, as prescribed above, may be tried, or two-grain freshly-prepared quinine pills may be taken, one after each meal. Where there is headache as well, five grains of phenacetine may relieve this, and bring the temperature down to normal at the same time.

It cannot be too strongly insisted upon, however, that fever is a sign that the patient is doing too much (Latham). Complete rest outdoors, both day and night, will, no matter what the stage of the disease, do more to reduce the fever than any form of medication.

**Pain.** Sometimes where the coverings of the lungs are also diseased, and in this way give rise to pain (pleurisy), strapping the affected side with overlapping strips of adhesive plaster gives great relief. The patient should first empty his lungs by breathing out, and then the straps, which should be about eighteen inches long and two inches wide, should be applied from the spine to the front of the chest, each one over-lapping the last (similar to the strapping for a fractured rib, *see page 387*). The pain, which results from constant coughing, needs no separate treatment apart from that of the cough.

**Continuous Coughing.** Sometimes this is largely habit, and therefore can be lessened by explaining to the patient that he is only harming himself by not better resisting the constant temptation to clear the throat and lungs. In any case, living in the open air night and day is the best means of quieting a troublesome cough.

The innumerable cough mixtures so often recommended, if they relieve the cough at all, do so simply by deadening the nerves, without benefiting the diseased conditions. They are therefore much better dispensed with, as their continued use invariably upsets the digestion. Creosote or guaiacol, as prescribed above, however, often do succeed in lessening the cough.

**Expectoration.** For excessive expectoration, turpene hydrate, two or three grains morning and evening, after meals, has been much used in sanatoria.

**Blood-spitting.** When the expectoration is only occasionally streaked with blood, no special treatment other than a more plentiful supply of fresh air, day and night, is required.



# THE OPEN-AIR TREATMENT OF CONSUMPTION



AFTERNOON CONVERSATION IN THE GROUNDS AT MIDHURST



TAKING THE SUN IN AN ALCOVE



A GAME OF CHESS ON THE LAWN

Photographed at the King Edward VII. Sanatorium at Midhurst.



Clarke

#### THE TREATMENT OF CONSUMPTION BY GRADUATED LABOUR

Here are shown consumptives at the Frimley Sanatorium who have made good progress and are engaged on the heavier tasks—making trenches, grubbing up tree stumps, pulling trucks laden with stones. At the bottom is a great heap of earth piled up by patients in digging out the ground for a large reservoir at Frimley.



"GRADUATED" BRICKLAYING



THE OPEN AIR CARPENTER'S SHOP



PATIENTS USING SMALL TOOLS FOR LIGHT WORK



THE DAILY WALK



THE PAINTER PATIENT





GENERAL VIEW OF THE NATIONAL SANATORIUM AT BENENDEN



THE POST OFFICE WORKERS' PAVILION



ONE OF THE OPEN AIR HOUSES



HEALTH ON THE LAND



A PATIENT'S ROOM



Should any considerable amount of blood be coughed up, the patient should at once be put to bed and kept absolutely at rest. As he is usually terrified by the appearance of the blood, it should be explained to him at once that death rarely occurs from this cause.

An ice-bag should be placed over the chest, and the doctor should be called at once, as it may be advisable to give a hypodermic injection of a quarter of a grain of morphia to quiet the patient and reduce the tendency to further bleeding.

The patient should have no solid food for twenty-four hours, and very little liquid. Two or three ounces of milk every two hours will be all he requires for the next day or two, when, if there is no further tendency to bleeding, he may gradually get back to his normal diet. To further reduce the blood pressure in the arteries, the patient may be given a full dose of Epsom salts, the dose varying according to the amount usually required by the individual to bring about a free action of the bowels. Internal medicines are practically useless in stopping the bleeding. After one attack of hæmorrhage, the patient should take great care to avoid all over-exertion, and he should cut down the total amount of food taken during the day. Particular attention should be paid to avoiding constipation.

**Night Sweats.** Here, again, no drug can compare with the air-saturation obtained by sleeping out of doors as a means of preventing night sweats. It has been proved by sanatorium experience that patients who sleep out of doors in all weather practically never suffer from this most unpleasant symptom. Drugs for controlling night sweating are therefore little used nowadays.

**Diarrhœa.** Cutting out all solid food and living entirely on milk for a few days, after the bowels have been first thoroughly cleared out by a couple of grains of calomel and a dose of Epsom salts, may be enough to cure a simple diarrhœa. If there is pain, a dose of castor oil, with a fifteen drops of tincture of opium added, may set matters right. Where the diarrhœa is caused by ulceration of the intestine (set up by the tubercle bacillus), a long-continued course of creosote, as described above, gives the best results.

**Shortness of Breath and Loss of Appetite.** Both of these symptoms, which are common in consumptives who sleep, and spend much of their days indoors, are usually wonderfully benefited by the outdoor treatment. Drugs for increasing the appetite, bitters, etc., lose their efficacy after a few days' use, and only bring on chronic indigestion.

**Sleeplessness.** Here, too, if the patient be made comfortable in a garden shelter, there is usually little need for drugs. Sodium bromide, fifteen grains, or ten grains of trional may be given on special occasions, but the patient should not be allowed to become accustomed to the use of these drugs.

**Selecting a Climate for the Consumptive Patient.** Only recently it has become recognised that the actual climate of any particular health resort has little to do with the benefit the consumptive receives from a visit

there; most of the good comes from the extra amount of fresh air that he draws into his lungs while "doing the cure."

In other words, one can get better results by spending all one's time in one's garden at home than one would from a visit to Davos or Egypt if one stayed indoors and slept in a room with closed windows.

Generally speaking, a dry, sunny climate, cold and bracing, rather than warm and debilitating, is best for the consumptive. Pine forests, on account of their fragrance and the shelter they offer from keen winds, are favourite situations for tuberculosis sanatoria. The sea coast or a sea voyage, while useful in stationary or chronic cases, is contra-indicated where the disease is active, with afternoon temperature and night sweats.

**Exercise.** As to exercise, in whatever form this is taken, whether light gardening or walking about, the patient must know that if he feels tired after it he has done too much. All exercise should be methodical and progressive, increased week by week and carried out at definite hours. The patient should breathe through the nose, and avoid conversation when exercising, as this wastes valuable breath.

Generally speaking, an evening temperature of ninety-nine degrees, or a continuing pulse rate over ninety-five, indicates that the patient has been doing too much.

As to the amount of food eaten, the safe rule is that he should have a more generous diet than he was accustomed to prior to his illness. Dr. Halliday Sutherland, however, points out the absurdity of "stuffing" the patient with the idea of keeping his strength up. "He may put on weight like the Strassburg geese, but the tissues become flabby, and resistance is lowered." The chief articles of diet should be milk, eggs, butter, porridge, fish, chicken game, mutton, raw meat, vegetables, mild bacon, ham, well-toasted stale bread, and preserves. To be avoided in general are greasy soups, cold meat, tinned meat, and sausages.

Alcoholic beverages of all kinds are generally contra-indicated. Rarely, and in the hands of an experienced physician, some alcoholic stimulant may be prescribed with success. In nine cases out of ten, however, alcohol only helps the tubercle bacillus in its attacks against the patient's system.

**CONSUMPTION OF THE BOWELS, OR TABES MESENTERICA,** is a not uncommon form of tuberculosis in young children. The tubercle bacillus, which in grown people much more frequently attacks the lungs, in children may settle in the glands running along the spinal column at the back of the abdomen, giving rise to the condition called consumption of the bowels.

**Symptoms.** A gradual increase in the size of the abdomen, with vague griping pain and a constant tendency to an ill-smelling diarrhoea, are the chief symptoms. The child loses colour and weight, and may be constantly restless and fretful. Very rarely the physician, by pressing his finger tips deeply



DISPENSING MEDICINES



IN THE BACTERIOLOGICAL LABORATORY



EXAMINING NEW PATIENTS

FIGHTING CONSUMPTION IN SOUTH-EAST LONDON: DEPTFORD CONSUMPTION DISPENSARY

but gently along the middle line of the abdomen, may be able to make out the swollen glands. Generally, however, the abdomen is too swollen and blown out with gas to allow of the diagnosis being made in this way until the disease is far advanced. A valuable sign, even in early cases, is a slight rise of temperature, perhaps not more than a degree, regularly every night.

**Cause.** The glands along the backbone may receive the infection from direct extension of tubercular disease from some adjoining part, or the bacilli may reach the glands in the blood stream. By far the commonest cause is the drinking of milk from tuberculous cows. The bacilli from the cow find their way into the child's bowel in the milk, and then work their way through directly into the underlying glands.

The outlook is far from hopeful in those cases where the disease has advanced sufficiently to allow the glands to be readily felt through the abdomen. Pronounced nightly fever, much wasting, profuse brownish ill-smelling stools, and the presence of lumpy, doughy, ill-defined masses in the abdomen are all bad signs. On the other hand, many patients suffering from advanced disease do gradually get better, and finally completely recover.

Sometimes in those cases which are gradually going downhill, despite all treatment, the fatal termination is hastened by the tubercular disease suddenly breaking out in some vital spot, such as the coverings of the brain.

**Treatment.** No case should be considered hopeless, for although there is little relief to be looked for from medical treatment, sometimes even advanced cases take on a new lease of life, and rapidly recover when removed from the dark, damp, unhygienic town into country or seaside fresh air and sunlight.

The diet is of the utmost importance here. Because the bowel is so closely associated with the diseased part—the glands just behind it—the cardinal point in dieting is to give those foods which will supply the maximum of nourishment to the patient, while throwing the minimum amount of strain on the digestive organs. Since milk is largely digested in the bowel—which we wish to save from all unnecessary work—it should only play a minor part in the patient's dietary. Nourishing broths, beef juice (prepared by squeezing very lightly grilled lean steak in a press or lemon squeezer), scraped underdone beef or mutton (without fat), and eggs, etc., should be plentifully provided. If experiment shows that the diarrhœa is not increased by milk, but rather that the milk is digested and causing the child to put on flesh, its use may very cautiously be continued. Fatty foods generally should be avoided. Sweetened custards and junkets may be given to supply the necessary sugary element.

Cod-liver oil, the necessary medicine in all other types of tubercular disease, must be used with care here, for, on account of its fatty nature, it may be digested with difficulty, or not at all. Examination of the stools should be made from time to time to see whether undigested oil is present, and the best proof of all of thorough digestion, an increase in the patient's weight should be looked for. Cod-liver oil, combined with the hypophosphites as in the following prescription (Throat Hospital, Golden Square), sometimes seem to give good results :

R

Sodium hypophosphite	.. .. .	32 grains
Calcium ..	.. .. .	32 "
Cod-liver oil ..	.. .. .	2 ounces
Powdered acacia ..	.. .. .	192 grains
Oil of cassia ..	.. .. .	4 minims
Powdered tragacanth ..	.. .. .	16 grains
White sugar ..	.. .. .	160 "
Water .. ..	.. .. . enough to make	4 ounces

Make into a mixture. Give one teaspoonful three times a day after meals,



Iodoform has sometimes been found useful. Sir James Goodheart recommends the following combination of iodoform and cod-liver oil :

R

Iodoform	..	..	..	..	..	12 grains
Compound tincture of lavender	..	..	..	..	..	3 drachms
Oil of cloves	..	..	..	..	..	4 drops
Cod-liver oil emulsion	..	..	..	..	..	3 ounces
		enough to make				

A teaspoonful for the dose, three times a day, for a child of five years.

**Tuberculin Treatment** has been used with a certain amount of success in "consumption of the bowels," more especially when there is free fluid in the abdominal cavity. The treatment, however, in our present knowledge of its mode of action should never be attempted except by a physician who



THE INSTITUTE BUILDINGS



DR. LOFFLER, THE DIRECTOR



THE HEAD OF THE TUBERCULOSIS DEPARTMENT WITH HIS ASSISTANTS

THE HOME OF THE TUBERCULIN TREATMENT: THE KOCH INSTITUTE IN BERLIN

has all the facilities at hand for carefully observing the patient's opsonic index and regulating his dosage thereby. (*See OPSONIC TREATMENT.*)

A change from dark, gloomy surroundings and impure inland air to the bracing, pure air of the sea is often of much more value in arresting the process of the disease than all other means of treatment combined.

If the patient is to recover, it is because his system, built up by fresh, pure air and sunlight and nourishing, readily digestible food, is able to prevent the invading germs from making further headway. If possible, he should have a bed which can be lifted off its legs and placed on wheels, so that every moment of the day, when it is not actually raining or foggy, he may be out in the open air and sunlight.

**CONTAGIOUS DISEASES**, strictly speaking, as distinguished from infectious diseases, are those in which the disease is passed on by direct contact from an infected person to an uninfected person.

**CONTRACTURE.** A permanent shortening of muscles or other tissues, especially scar tissues. Contractions may occur in paralysis and cause great deformity. Their treatment is described under the names of the diseases in which they occur. The contractions following on the healing of large burned areas frequently require treatment by operation.

Contraction means a temporary shortening such as occurs in cramp, convulsions, lockjaw, epilepsy, poisoning by strychnine, etc.

**CONTRA-INDICATIONS** are diseases or symptoms which indicate that certain drugs should not be administered. For example, in disease of the kidneys, morphia or opium in any form is always dangerous. In an epileptic fit, brandy or whisky may be highly injurious. In gout, colchicum is a valuable remedy, but if the heart is feeble this drug is contra-indicated.

A great deal of harm may be done by a person dosing himself with strong remedies when he does not know whether or not some condition of his system contra-indicates the remedy used. For example, in bronchitis or any "cough" in which there is much secretion and expectoration, it is dangerous to take a cough mixture containing opium or other sedative. The result would be accumulation of the secretion and blocking of the air passages. Many cough mixtures on the market contain these sedatives, which may lessen the cough, but may injure the patient.

**CONTRE-COUP** is a term sometimes used to signify an injury of a bone not at the part which is subjected to violence, but at a point on the opposite side.

**CONTUSION.** (*See BRUISE.*)

**CONVALESCENCE**, the period following after the actual disease has passed off, but before the normal health has been fully regained.

In many diseases the period of convalescence is fully as risky and dangerous as is the actual course of the disease. For example, measles itself and whooping cough are not dangerous diseases. In the convalescence from these two

ailments, however, unless the patient is most carefully tended and watched, serious complications, such as broncho-pneumonia, are very apt to arise.

The care of the convalescent is as important as the nursing of the very sick. Every woman should understand how to look after a patient who is recovering from a severe illness, for sickness is a thing that is bound to come into her life at some time or other.

So often a patient reaching the stage of convalescence will throw himself back, or even bring about a relapse, simply by not having the care and watchfulness that are needed so much just at this time. The danger is, that having passed the critical stage of the illness, the patient is apt to think—because he feels so much better—that he is almost well at once. He becomes restless to get about, and does little things that in his weak state greatly overtax his strength.

The patient should not be encouraged to think that he or she is too well, but the nurse should do all she can to encourage an atmosphere of lazy content. This is often rather difficult, and needs much tact and thought, as fits of depression may occur, owing to the weariness and languor that always follow an illness. This atmosphere of leisure is the secret of a successful recovery, and the nurse can further this a great deal by apparently taking things easy herself.

The too brisk nurse who is always rushing round and wanting to do things, is not comforting to the tired and weak nerves of the convalescent. She only provokes irritability, which does not aid towards recovery. To help towards this all-important rule of leisure, encourage the patient to dawdle, especially when rising in the morning.

With the woman patient little luxuries and vanities should be indulged in, such as scented soaps and toilet vinegars. Interest should be taken in different styles of dressing the hair, pretty dressing gowns, etc. There are any amount of little things of this kind that will keep a patient of either sex contented and amused, so warding off fits of depression as well as speeding the convalescence.

Another difficulty which often arises is getting the patient to take sufficient nourishment. This may call for a vast amount of patience. In most cases, however, thought and tact will accomplish its object. Let all the food be of the most tempting and nourishing materials. For instance, the early morning cup of tea, which is nearly always readily taken, may be rendered more beneficial by making it with milk instead of water.

Then in the middle of the morning, when light refreshment is needed after the morning toilet, let it be something after the manner of beaten up egg in milk or beef-tea, foods nourishing as well as pleasing to the palate. Let it be remembered that it does one far more good to eat things one favours than to swallow food "somehow" because it is one's duty. Food digests much more easily if it is eaten with relish.

It does not necessarily mean that food has to be expensive to be palatable and nourishing ; it is care in serving that is needed. Wines and spirits are, as a rule, quite unnecessary. In fact, a convalescent is nearly always better without them.

Below is a seven days' dietary (Dr. Chalmers Watson, " Food and Feeding ") which affords a useful guide for a parent or a nurse in catering for a patient during convalescence.

After slight illness the return to ordinary foods perhaps need not be so long-delayed. On the other hand, after typhoid, even though convalescence is fairly advanced, the above rate of return to ordinary diet might be too rapid for safety.

### A SEVEN DAYS' DIETARY.

#### *First Day.*

- 7 *a.m.*—If awake early, a small cup of freshly-made tea, with cream.
- 8.30 *a.m.*—Milk and thick barley-water, half a slice of toast, cut in fingers.
- 11.30 *a.m.*—Calf's foot jelly, about 2 ounces.
- 1 *p.m.*—Thick beef-tea. A few grapes.
- 4 *p.m.*—Cup of tea, with milk and cream, thin slice of bread and butter.
- 6.30 *p.m.*—Cup of Benger's food or Allenbury's malted food, No. 3.
- 9 *p.m.*—Cup of beef-tea.

#### *Second Day.*

- 7 *a.m.*—A small cup of coffee, with milk.
- 8.30 *a.m.*—Malted gruel.
- 11.30 *a.m.*—Milk and soda with plain biscuits.
- 1 *p.m.*—Beef-tea puree, with strip of toast. Blancmange.
- 4 *p.m.*—Cup of tea, with milk and cream. 1 slice of bread and butter.  
1 sponge finger.
- 6.30 *p.m.*—Plain egg flip with biscuits.
- 9 *p.m.*—Cup of chicken soup or chicken jelly.

#### *Third Day.*

- 7 *a.m.*—A small cup of freshly-made tea, with cream, and small half-slice of toast.
- 8.30 *a.m.*—Breakfast : Saucerful of oatmeal gruel, with cream, and a little piece of Vienna roll (crusty part).
- 11.30 *a.m.*—A teacupful of beef-tea (unthickened), either hot or cold.
- 1 *p.m.*—Steamed whiting, half slice of bread. Semolina or ground rice pudding.
- 4 *p.m.*—Potash and milk, with rice biscuit or sponge cake. A little fruit.
- 6.30 *p.m.*—An invalid food, in any form.
- 9 *p.m.*—Some variety of meat tea or infusion.



*Fourth Day.*

- 8 *a.m.*.—Saucerful of hominy, porridge or barleymeal gruel, etc. A small cup of tea, toast and a very little butter.
- 11.30 *a.m.*.—A teacupful of chicken-tea, with milk and potash, or a little fruit.
- 1.30 *p.m.*.—Baked or steamed fish. Spinach. \*Apple cream.
- 4 *p.m.*.—Potash and milk, or a small cup of fresh tea, bread and butter, and sponge cake.
- 6.30 *p.m.*.—Peptonised cocoa and milk, or custard.
- 9 *p.m.*.—Some variety of meat infusion, *e.g.*, veal tea.

*Fifth Day.*

- 8 *a.m.*.—A lightly boiled egg, toast or roll with butter. A small cup of tea.
- 11.30 *a.m.*.—Teacupful of soup, or a little fruit, and a drink of milk and potash.
- 1.30 *p.m.*.—Rabbit, chicken (roast), two slices from breast, or pigeon served with bread sauce. A small helping of vegetable, *e.g.*, stewed vegetable marrow or cauliflower, not potatoes. Pudding: apples cooked in water or sago eaten with cream.
- 6.30 *p.m.*.—Oysters.
- 9 *p.m.*.—Some variety of soup.

*Sixth Day.*

- 8 *a.m.*.—A piece of boiled or steamed haddock, whiting or sole. Tea, bread or toast and butter.
- 11 *a.m.*.—Soup, or egg drink.
- 1.30 *p.m.*.—Sweetbread or tripe. Vegetable, stewed tomato (pulp only). Stewed fruit with custard.
- 4 *p.m.*.—Afternoon tea (avoiding rich cakes and pastry).
- 6 *p.m.*.—Poached egg on toast or spinach. Milk and potash.
- 9 *p.m.*.—Cup of soup.

*Seventh Day.*

- 8 *a.m.*.—A few rolls of well-fried streaky bacon. Toast and tea.
- 11.30 *a.m.*.—Egg flip, or soup, or milk and potash. Fruit.
- 1.30 *p.m.*.—A small slice of tender roast mutton, or the eye of a tender mutton chop. Vegetable. Jelly.
- 4.30 *p.m.*.—Afternoon tea (avoiding rich cakes and pastry).
- 6.30 *p.m.*.—Fish, milk pudding.
9. *p.m.*.—Cup of soup.

Another most important duty of the convalescent's nurse is to tend to the ventilation of the sick room. The windows of the patient's room should be kept open just so many inches night and day. The doctor gives the orders, but it falls on the nurse or mother to carry them out. Never let the fresh air fall on the back

of the patient, for this may cause a chill. If he is suitably covered up he can stand any amount of pure air as long as he is not in a draught.

Want of ventilation is much more dangerous than over-ventilation. Therefore, instead of closing the windows when the air feels chilly, pile up a big fire in the room and put more wraps on, even if it is summer. This is far healthier than stuffiness.

**CONVOLUTIONS** are the raised areas of the brain separated off one from the other by the depressions or furrows which break up its surface. (See BRAIN.)

**CONVULSIONS** in infants and young children are most often due to teething, indigestion, worms in the intestines, or oncoming rickets. In grown people the commonest causes are epilepsy, hysteria, uræmia, poisoning, alcoholism, tetanus, pregnancy, and brain tumour.

**Symptoms.** The rolling of the eyes, sudden movements of the limbs and head with twitchings of the muscles, and grinding of the teeth cannot be mistaken.

**Treatment in Infants.** Place the patient at once in a hot bath. After a moment or two, dry carefully and put him in his cot with a bread and mustard poultice applied over the back of the neck. This is prepared by making an ordinary bread poultice and sprinkling its surface lightly with powdered mustard.

If the hot bath does not stop the convulsions, alternately plunging the patient into first a very hot and then a very cold tub may succeed. As soon as the child is quiet a teaspoonful of castor oil may be given, and the lower bowel should be washed out with a half-pint of warm water injected into the rectum.

The following soothing mixture suitable for a child from nine to fifteen months is sometimes successful in preventing further convulsions:

R

Ammonium bromide	..	..	..	..	1½ drachms
Tincture of belladonna	..	..	..	..	2 ..
Chloral hydrate	..	..	..	..	1 drachm
Chloroform water	..	enough to make			6 ounces

Make into a mixture and give a teaspoonful every hour for four hours after the last convulsion.

The gums should be looked to at once, for the irritation caused by a tooth trying to force its way through the gum may be the sole cause of the convulsions. After washing the hands thoroughly with hot water and soap, and then soaking for a moment in a solution of one part of carbolic acid to twenty parts of water, run your index finger around the top of the gums, to see if any projecting sharp point of tooth is pressing to break through. If such is the case, a little sawing with the finger-nail over the prominent edge of the tooth will usually be enough to cut through the gum, immediately relieving all the pain and irritation which cause the convulsions. The preliminary hand cleaning must not be omitted.

The infant's diet must also be carefully revised. A mass of curdled, undigested milk may be the sole cause of the trouble. A little lime water, or a half teaspoonful of albulactin (*see page 48*) added to each bottle) to render the curd of the milk softer and more readily digestible) may at once relieve all tendency to further convulsions.

If round worms are suspected give santonin (one half-grain for a year-old baby, and two grains for a child of three to four years), mixing it with butter on bread, and disguised with a sifting of sugar. Two hours later, a teaspoonful or more of castor oil should be given, to hurry the worms (killed by the santonin) out of the bowel.

**Treatment in Grown Persons.** A grown person in a convulsion should be placed on a low couch, or a rug with a pillow under the head and shoulders. Any tight clothing about the neck or waist should be loosened. To protect the tongue, a cork or a piece of wood should be thrust between the back teeth. The doctor should be called in at once, for before any treatment can be carried out the cause of the convulsions must first be determined. To quiet the patient the doctor may give a few whiffs of chloroform on a towel, but every effort should be made to relieve the condition which causes the convulsion (epilepsy, uræmia, poisoning, etc.) rather than simply to quiet the muscular contractions.

**CO-ORDINATION.** This term is applied to the control exercised by the brain over the movement of muscles, so as to secure harmonious action. For instance, in any movements of the body, hands, arms, legs, eyes, etc., some muscles must be relaxed and others contracted in varying degrees in order to perform the particular movements desired. This is called co-ordination.

**COPAIBA** is an oily resin obtained from the bark of a South American tree. Its most important constituent is the oil of copaiba, which is extensively used in the treatment of gonorrhœa.

The dose of copaiba is one-half to one fluid drachm, usually prescribed in several times its bulk of mucilage of acacia. The dose of the oil of copaiba is five to twenty minims. The oil may be prescribed in capsules or in mucilage of acacia. The following is a typical copaiba prescription :

R								
Copaiba	..	..	..	..	..	..	1	drachm
Mucilage of acacia	..	..	..	..	..	..	1	ounce
Peppermint water	..	..	enough to make				4	ounces
Make into a mixture. Dose : two tablespoonsful								

Copaiba (and its oil) acts as a powerful disinfectant of the genito-urinary passages. It also, in suitable doses, increases the secretion of urine by the kidney.

In gonorrhœa copaiba in the early acute stages sometimes appears to increase the severity of the disease. It therefore is customary to wait until four or five days after the onset of the attack before administering this most

useful drug. Large doses of copaiba (or its oil) produce severe pains in the loins, and blood in the urine. Sometimes a pronounced rash appears all over the body as a result of taking the drug.

Copaiba has a very disagreeable taste, and usually imparts a similar odour to the breath. For this reason many people are unable to take it.

**COPPER SULPHATE** is sometimes used in medicine, externally as a caustic, or internally as an astringent, or as an emetic. The dose of copper sulphate is one quarter to two grains as an astringent, five to ten grains as an emetic.

**COPPER SULPHATE POISONING** sometimes occurs from accidental overdosing with sulphate of copper.

**Treatment.** As vomiting is always a pronounced symptom, there is rarely any need of further emptying of the stomach. However, if a physician is at hand he may wash out the stomach through a stomach tube to get rid of any remaining vestiges of the poison.

As copper is intensely irritating to the lining membranes white of egg or rich milk should be given after the stomach has been thoroughly emptied. Rest in bed, with warmth to the feet, and stimulation by tablespoonsful of hot strong coffee comprise the rest of the treatment.

**CORNEA.** The transparent front portion of the eye which covers the coloured iris and pupil is called the cornea. (*For diseases, see under EYE.*)

**CORNS** are thickenings of the skin formed by pressure or prolonged rubbing. They are commonest on the toes or sole of the feet, though a true corn may develop anywhere on the body where the skin is constantly rubbed and irritated. Where the feet perspire profusely soft corns may develop between the toes.

**Treatment of Hard Corns.** The first essential is to remove the pressure or friction which caused the corn. If on the toes or sole of the foot a new pair of accurately fitting boots, neither too tight nor too loose, should be worn. The toes should be sufficiently wide not to cramp the foot, and care should be taken that there are no uneven lumps or ridges on the inner surface of the sole. In the correct-shaped shoe the inner side of the great toe, the side of the ball of the foot, and the inner surface of the heel should all be in a straight line.

Corns may be removed either by cutting or by the application of some plaster which will destroy the corn but not affect the surrounding normal skin. Salicylic acid seems to have a peculiar property of attacking corn tissue, while not affecting the surrounding parts. It is therefore the basis of most of the corn cures on the market. The following is a corn lotion which usually will remove the most stubborn corn if correctly applied :

R

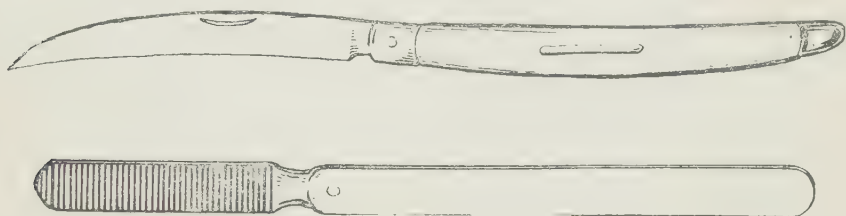
Salicylic acid	..	..	..	..	..	I drachm
Castor oil	..	..	..	..	..	10 minims
Collodion	..	..	..	..	..	1 ounce

Apply as directed.



Get from your chemist some bunion plasters an inch across, with a hole in the centre about a quarter of an inch in diameter. Place one of these over the corn so that the centre of the corn lies in the middle of the hole in the bunion plaster. Then fill up the hole with the corn lotion, and strap the plaster firmly in place with a strip of adhesive plaster. Repeat the process nightly for two or three nights, and then soak the foot for five minutes in a very hot footbath, when the corn will come away in one piece. If not, continue the treatment for another two or three nights.

The ill-fitting shoes which originally caused the corn must, of course, be replaced by snug-fitting footwear, otherwise another corn will speedily develop.



FILE AND KNIFE FOR CORNS

It should be remembered that shoes that are too large, which allow the feet to slip about, will cause corns just as rapidly as those that are too tight.

Attempting to remove corns with a razor or knife is always a more or less risky procedure, unless the strictest antiseptic precautions are taken, as serious blood poisoning may be set up.

**Soft Corns.** For soft corns, socks with separate compartments for each toe, similar to gloves, should be worn. Dust a little oxide of zinc powder in them each morning before putting them on. The skin between the toes should be frequently washed and carefully dried, and painted once a day with spirit of camphor.

Should the soft corn gradually turn into a hard one the treatment above described should be carried out.

**CORONARY ARTERIES**, the arteries of the heart itself, which supply blood for its nourishment. They are sometimes blocked by clots, etc., with serious consequences. One theory of angina pectoris ascribes this painful malady to disease or spasm of the coronary arteries (*see page 93*).

**CORPULENCE** denotes an abnormal development of fat.

While a moderate amount of fat, both under the skin and about the internal organs is necessary in health, a too great supply, by interfering with the functions of the organs and preventing the individual from taking exercise is a real menace to health. The table on the next page gives a rough estimate of the correct weight for different heights. These figures, however, cannot be taken too seriously, because body weight depends largely on the weight of the individual's bone, which may vary widely in perfectly healthy persons of the same height.

## PROPORTIONATE WEIGHTS FOR INCREASING HEIGHTS

HEIGHT				WEIGHT	
ft.	in.			st.	lb.
5	0	..	..	8	9
5	2	..	..	9	0
5	4	..	..	9	10
5	6	..	..	10	2
5	7	..	..	10	6
5	8	..	..	10	11
5	9	..	..	11	4
5	10	..	..	11	12
5	11	..	..	12	7
6	0	..	..	13	0

The heights here are measured without shoes, and the weights are the actual weights of the body without clothing; eight to ten pounds should usually be added for clothing. The weights will generally be a little less for women.

**Causes.** An hereditary tendency to get fat is the chief unavoidable cause. Next in order of importance comes laziness and over-indulgence in food and alcoholic liquors, especially when combined with a slow-acting mind and a sleepy disposition.

There are numerous cures or systems which have been designed with the sole object of reducing superfluous fat. Before describing some of these, however, it may be said in general that sweets and starchy foods—potatoes, white bread, thick soups, carrots, beets, etc., and alcohol should be greatly reduced. The amount of fat eaten is of not such great importance. White wines should be given up, no liquid at all being taken at meals, and only a moderate amount between meals.

**Banting's Method.** The best known of all the classic treatments is Banting's (*see page 190*). Here the starches and fats are reduced to a minimum, and the total amount of food taken is also greatly reduced.

*Breakfast.* Quarter of a pound of lean meat or white fish, one ounce of toast, one cup of tea without sugar or milk.

*Dinner.* Six ounces of lean meat or white fish, one vegetable (not potatoes), unsweetened stewed fruits. The patient may have one or two pieces of dry toast, and a glass or two of a dry hock or claret.

*Tea.* A little fruit, an ounce of dry toast, and a cup of tea without sugar or milk.

*Supper.* A quarter of a pound of lean meat or white fish.

Banting's system is a severe one, and few fat people have the strength of mind to adhere to it rigorously. On account of its highly meaty character this system should not be undertaken by anyone with symptoms of Bright's disease. The general rule is for the patient to follow the system for ten days or so, then for the next fortnight to allow himself a more moderate diet, and then to revert to the strict Banting system for a final two weeks. If the loss of weight

is more than half a pound a day or the patient becomes noticeably weak, the treatment should be immediately interrupted, and something less strenuous undertaken.

**Von Noorden's Method** allows a much more generous dietary.

8 *a.m.* Three ounces of lean cold meat, one cup of tea, with a spoonful of milk, no sugar, and one ounce of bread.

10 *a.m.* One egg.

12 *noon.* A cup of strong meat broth

1 *p.m.* A small plate of meat soup, flavoured with vegetables, six ounces of lean meat of one or two sorts, partly flesh, four ounces of potatoes with salad, four ounces of fresh fruit, or compôte without sugar.

3 *p.m.* A cup of black coffee.

4 *p.m.* Eight ounces of fresh fruit.

6 *p.m.* A glass of milk with a little tea added if desired.

8 *p.m.* Five ounces of cold meat, or seven ounces of meat weighed raw and grilled, an ounce of wholemeal bread, and an ounce of cooked fruit without sugar.

A glass of wine is allowed twice a day, and mineral waters, weak tea, or lemonade are allowed both at meals and between meals.

Neither of these dietaries are meant to be kept up indefinitely. After the patient's weight has been reduced a couple of stone or so, a special diet which he can keep to indefinitely should be devised. This should be moderate in amount with no potatoes or sweet foods, no sugar in the tea or coffee, and a minimum of bread. In place of sugar in the tea or coffee saccharin tablets, which can be obtained from any chemist may be employed. Fatty meats, such as goose and pork, should be forbidden. The diet should include plenty of such vegetables as cabbages, spinach, etc., for they supply bulk and give a sensation of fullness. Ales, beer, stout, sweet wines and spirits should be given up entirely.

**The Salisbury Treatment**, another favourite anti-fat regime, is nothing more or less than a short course of an exclusive meat diet. For the week or more the patient eats a pound of meat, morning, noon, and night, after having previously washed out the stomach by drinking two glasses of hot water.

This treatment also throws a severe strain on the kidneys, and therefore should not be undertaken by anyone who has any kidney troubles. After the week of treatment the patient gradually cuts down the meat, and returns to a more ordinary diet, continuing, however, to avoid potatoes, white bread, thick soups, sweet foods, and all alcoholic beverages.

**Drug Treatments.** There is no drug which will reduce superfluous fat without having an active and more likely than not harmful effect on the rest

of the body. Vinegar drinking and the taking of other acids simply upsets the digestive organs, brings on anæmia, and in no way removes the unwanted fat.

Apart from dieting, exercise, and hot baths are the greatest use in combating obesity. A Turkish bath twice a week may be tried, but only after the patient has been examined by a doctor, and pronounced free from all heart weakness.

The exercise suitable to the individual case also depends largely on the condition of the heart. Very fat people often have weak hearts through the collection of unhealthy fatty tissues about the heart which prevents its normal action. Walking on the flat, doing just enough to bring you home slightly fatigued and in a gentle perspiration, is the best form of exercise. An hour or two daily devoted to walking will greatly increase the beneficial results to be obtained from either of the dietaries described above. After a week or two of gentle exercise it will usually be found that the heart action becomes freer and its labours less noticeable under exertion. Then, as one gets so to speak into training, really strenuous exercise which will dissipate the extra, unneeded fat in short order may be indulged in.

Thyroid extract, which is sometimes given to reduce unnecessary fat is a most dangerous drug unless prescribed by an experienced physician who can watch from day to day the effect it has on his patient.

**CORPUSCLES**, signifying little bodies, is the name given to the red and white cells of the blood. (*See BLOOD, page 241.*)

**CORROSIVES** are substances which, when brought in contact with the tissues, destroy them by eating their way through them. Typical corrosive poisons are strong carbolic acid and strong nitric acid.

**CORROSIVE SUBLIMATE** is another name for the bichloride of mercury. Although a deadly poison it is constantly used by the surgeon (one part of mercury to 1,000-2,000 parts water) as an antiseptic for killing germs on the skin and in wounds (*see MERCURY*). White of eggs and milk are the common antidotes in corrosive sublimate poisoning, but the action of the drug is so violent that treatment is rarely successful if any quantity is taken internally.

**CORSET-LIVER** is the name given to a malformation of the liver due to compression by tight-lacing. The lower part of the right lobe is reduced in size, scored by deep grooves from pressure of the ribs, and is often rendered almost useless by being converted into fibrous tissue.

**CORYZA.** *See COLDS and COLD IN THE HEAD.*

**COSTIVENESS.** *See CONSTIPATION.*

**COTTON WOOL** is useful for protecting wounded or chilled parts from cold and injury. It can be obtained medicated with boric acid, salicylic acid, iodoform, etc.



Sometimes cotton wool placed in the ears gets pushed in, and remains in the ear, causing deafness ; or although the pledget of wool may be removed some fibres remain, and when a considerable accumulation of these occurs, they may form a hard mass mixed with the ear wax. When placing cotton wool in the ear, therefore, it should never be pushed far in.

Absorbent cotton wool is prepared by removing the natural oil by treating it with alkalis. Ordinary non-absorbent cotton wool contains about 10% to 15% of this natural fat.

**COUGH.** This is always a symptom of some ailment or disease, and should never be considered as an ailment in itself. (*For treatment see the disease in which the cough occurs: BRONCHITIS, LARYNGITIS, CONSUMPTION WHOOPING COUGH, etc.*)

**COUNTER IRRITANTS**, or blisters, are substances used to produce irritation of the skin. The idea is to bring an abundance of blood to the skin vessels with a view to relieving congestion of deeper structures or organs. Mustard plasters, tincture of iodine, turpentine, chloroform, and Spanish fly are examples of substances commonly used as counter irritants. (*See BLISTERS.*)

**COWPOX OR VACCINA** is a mild, infectious disease of the cow in which vesicles or blisters appear on the udders and teats. The lymph obtained from these vesicles is the material used for vaccination against small-pox. It is still a disputed question whether cowpox is a separate disease or human smallpox transmitted to the cow directly or through the horse and modified in its nature. When a cow is inoculated with small-pox all the symptoms of cow-pox develop.

**COXALGIA** is pain in the hip-joint.

**COXAVARA** is a condition due to an abnormality of the thigh-bone. This results in a turning outwards of the legs, the patient walking with a limp, or a waddling gait.

The condition may be congenital, or the result of rickets or an injury. The treatment consists of prolonged rest in bed and the application of splints or weights attached to the legs to keep them fully extended. In more advanced cases a surgical operation may be necessary.

**CRACKED-POT SOUND.** A sound resembling that produced by striking a cracked iron pot is sometimes heard when the physician taps with his fingers over the chest of a consumptive. This "cracked-pot sound" indicates a cavity in the lung.

**CRAFT PALSIES.** Spasmodic paralysis or cramp sometimes attacks certain groups of muscles constantly used in the individual's trade or profession.

"Writer's cramp," "violinist's arm," and "telegraphist's wrist" are common examples. The affection begins by the worker feeling that he cannot follow out the usual wrist or arm movements with their customary ease. The muscles get slightly stiff, and finally whenever they are used for this particular

work (for example the holding of a pen in writer's cramp) the forearm and finger muscles develop a spasmodic cramp. As a general rule, however, the power of the affected muscles for doing other movements is not lost. Thus the victim of writer's cramp who cannot hold a pen may perhaps be able to use his fingers freely for typewriting.

**Treatment.** The first step is to give up entirely that particular form of muscular work which has caused the palsy. As any craft palsy is a certain sign that the nervous system is in a greater or less state of pronounced revolt, the patient's general health as well as the local condition needs attention. If he has been living an indoor, "high-pressure," sedentary life he should start treatment by taking more outdoor exercise, regulating his hours of sleep, looking carefully to his diet and generally leading a less nerve-wrecking and more hygienic life. To improve the appetite and the general nervous tone a course of some readily digestible strychnia and iron tonic should be taken. Easton's Syrup, one half to one teaspoonful three times a day after meals for six weeks, is an excellent prescription in these cases. As the contained iron sometimes has a constipating effect, the patient should regulate the bowels by taking two or four grains of cascara at night when necessary. Spirits, alcoholic beverages of all kinds, tea and coffee should be given up, as they all have a more or less irritating effect on the nerves.

**Local Treatment.** Absolute rest of the part as long as the muscles are in the least painful is an essential. When all pain has disappeared massage or electricity may be tried. A small galvanic battery can be obtained for a small cost and the treatment can easily be carried out at home. The electrode marked "positive" is pressed against the back of the neck while the "negative" one is gently rubbed over the paralysed muscles of the forearm. Enough current should be used to produce a warm tingling sense, but no pain, in the part. Five minutes twice a day is sufficient for these applications.

Under the treatment of complete rest, gentle massage, and electricity as above all the symptoms will pass away usually in a week or two, but no attempt should be made to return to the particular work causing the spasm for at least three months. Otherwise the palsy is almost certain to return. The muscles, however, should not be allowed to degenerate through lack of use. Finger exercises entailing muscular movements as much as possible the reverse of those which originally caused the cramp should be devised and carried out regularly for five to ten minutes twice a day.

**CRAMP** is a local painful spasm of a muscle or of the muscular tissues in some internal organ due to continued abnormal nerve impulses or stimuli to the nerves supplying the part.

The commonest form of cramp in a limb muscle occurs at night, when one wakes suddenly with an excruciating knife-like pain in the back of the calf or thigh. The pain may pass off after a moment or two as suddenly as it

appeared. Other muscle groups often attacked are those which make up the sole of the foot and the side of the neck.

Gouty or rheumatic tendencies, exposure to cold or damp, and over-fatigue are the commonest causes. Stomach cramp is a common symptom in indigestion. The pain may be the result of sudden distension of the bowel with gases caused by abnormal fermentation of the contained food, or the spasm may be due to irritation of the nerves supplying the stomach and intestines. (*See COLIC.*)

**Treatment of Ordinary Cramp.** Rub the part vigorously with the open hand, alternating this with massage with the fingers. When the acute spasm has passed off rub in well any household liniment, wrapping the part immediately afterwards in cotton wool to prevent chilling.

People subject to muscular cramp will find the following liniment of the greatest service.

R

Chloral hydrate	..	..	..	..	..	I ounce
Menthol	..	..	..	..	..	I "
Camphor	..	..	..	..	..	I "

Mix well in a mortar until of a syrupy consistence. Use as liniment externally, rubbing in well.

**CRANIAL NERVES** are the nerves which arise in the brain as distinguished from the spinal nerves originating in the spinal cord. They are twelve in number at each side of the brain.

**CREAM OF TARTAR** is the common name for the bi-tartrate of potassium. It is sometimes used in medicine to correct over-acidity of the blood.

The well-known "Imperial drink," a favourite household remedy for slight fever, is made by adding a teaspoonful of cream of tartar, a little sugar, and a quarter of a lemon to a pint of cold water.

As a cooling drink, and to flush out the kidneys half a teaspoonful may be taken in a glass of water two or three times a day in the hot weather.

Two to six teaspoonsful in a little water is sometimes used as a purgative.

**CREMATION.** This is the most hygienic form of disposal of the dead. The prejudice against cremation is still very strong among Christian people, but every year sees an increasing number of adherents. Besides the sentimental antagonism, there is the argument that cremation destroys all traces of foul play. On many occasions murderers have been convicted on evidence derived from an examination of exhumed bodies. But on the other hand if cremation became general we should have far stricter regulations with regard to the issuing of death certificates. A more searching examination would be made in all suspicious cases. And in this way possibly an occasional crime would be discovered which would escape detection under the present system. The gain to the health of the people would be very great if all dead bodies were incinerated, especially in periods of widespread epidemics. All germs of

typhoid fever, cholera, and other infectious diseases would be destroyed instead of being allowed to multiply in the ground.

When a body is cremated it is reduced to about five or six pounds of ashes in a couple of hours. No admixture of the fuel used is present. The process is at present rather expensive, but were this the general mode of disposing of the dead the cost would be greatly reduced.

**CREOLIN** is a weak disinfectant sometimes used (a tablespoonful to a pint of water) for sprinkling on the floor of sick-rooms to remove unpleasant odours.

**CREOSOTE** is obtained from the distillation of wood tar. It is a colourless or light yellow liquid with a burning taste and peculiar aromatic odour. Creosote has been much used in consumption, and even in advanced cases is considered to lessen the cough and expectoration. On account of the unpleasant taste creosote is usually prescribed in capsules, one to five drops.

Where there is much unpleasant smelling expectoration in advanced consumption great relief is often obtained by inhaling the steam from a mixture of half a teaspoonful of creosote added to a pint of very hot but not boiling water.

As creosote often causes stomach upsets until the digestive system has got used to it the patient should begin by taking doses of two or three drops three times a day. As the stomach becomes more tolerant, the dose may be increased, until finally as much as half a teaspoonful may be taken at a time. If not given



A CASE OF CRETINISM IN A CHILD AGED SIX

Cretinism, a condition considered to be due to some abnormality of the thyroid gland, frequently yields in a remarkable fashion to treatment with thyroid preparations, particularly if the case receives prompt and thorough treatment. (From photos in the Gordon Museum, Guy's Hospital.)



in capsules the unpleasant taste may be disguised by mixing the dose with a little rum in a wine-glass.

**CREPITATIONS** are sounds distinguished in certain lung diseases when listening over the chest with a stethoscope. They may be likened to anything from the crackling of hairs rubbed together (dry crepitations) up to distinct bubbling sounds (moist crepitations).

**CRETINISM.** The chief symptoms are feebleness of mind, bone deformities, pallor and flabby swelling, and a general under-development of the body. The disease is thought to be due to some abnormal function or lack of function of the thyroid gland, which is situated in the neck just below the Adam's Apple.

**Treatment.** Whether or not the disease can be arrested depends largely on the length of the time during which the complaint has been allowed to progress untreated. In long-standing cases where there is much physical deformity and the mind is greatly affected the outlook is poor as far as a complete cure is concerned. Even in these cases, however, notable improvement, both in mentality and in physical development often takes place immediately treatment is begun.

As the disease is due to an abnormality of the thyroid gland it is not unnatural that small doses of healthy thyroid glands, continued over long periods, should give good results. However, as overdosage brings on dangerous symptoms (acute diarrhoea, fever, loss of weight and heart irregularities), treatment should never be undertaken except by a medical man, who can watch the progress of the disease and the effects of the drug from week to week.

The usual dose at the start is a quarter to half a grain of powdered dried sheep's thyroid gland taken at bed-time. This dose is gradually increased until finally as much as a grain or more is being taken nightly. The actual amount, of course, must depend on the condition and the age of the child. Under this treatment the puffiness of the skin usually quickly disappears and



ANOTHER CASE OF CRETINISM

From a photo of a case at St. Bartholomew's Hospital.

rapid increase in height (five or six inches in as many months) may take place. The child's semi-imbecile expression changes to a look of more or less intelligence, and new words and phrases are learned and used. The hair, formerly coarse, dry, and dull, regains its normal lustre and softness.

Early cases receiving prompt and thorough treatment may grow up into apparently perfectly normal individuals, though it may be necessary to take the treatment at intervals throughout life.

Where the patient is in the teens or full grown before treatment is begun a complete cure can never be expected, but even in these cases the results are often so remarkable that an extensive trial of the thyroid extract is always warranted.

**CRISIS** has two meanings in medicine.

(1) A severe attack of pain in the stomach, the intestines, and sometimes in the larynx, liver or kidneys, such as occurs in locomotor ataxia. The most common seat is the stomach. These attacks recur again and again.

(2) The sudden change occurring in the course of one of the fevers which is the beginning of recovery. Usually there is profuse sweating, the temperature falls rapidly, the pulse slows and the breathing becomes regular. From a state of excitement and discomfort the patient passes into restful sleep. Pneumonia frequently passes off in this way, the temperature abruptly falling to normal within twenty-four hours. Typhoid fever, on the other hand, terminates by "lysis," the temperature falling only very gradually by daily steps.

**CROTON OIL** is one of the most active cathartics (purgatives) used in medicine. Usually given one drop, or, at the very most, two, on a lump of sugar, croton oil is chiefly used in cases of sudden unconsciousness, paralytic stroke, etc., where it is important to flush out the bowels without delay.

On account of its highly irritating qualities, croton oil should never be used except by the physician in attendance.

**CROUP.** The chief symptom of this ailment of childhood is the peculiar hoarse trumpeting cough followed by a deep drawing in of the breath, somewhat similar to that of whooping-cough.

Two varieties are described :

Diphtheritic croup or diphtheria, where the bacillus causing the disease is the peculiar organism known as the Klebs-Loeffler bacillus ; and

True croup or non-contagious croup, where other less virulent micro-organisms are present.

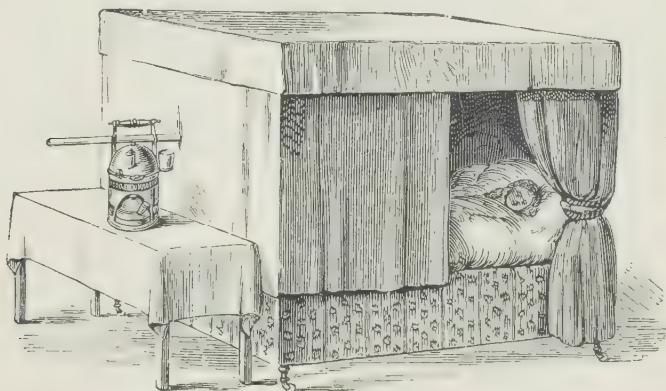
In both varieties the larynx becomes inflamed and swollen, as does the whole back of the throat, and a yellowish whitish membrane is usually present as well.

A third variety, Spasmodic Croup or Laryngismus Stridulus, is a purely nervous affection without any inflammatory condition of the larynx. This variety is not uncommonly seen in infants suffering from rickets.

**True Croup** is a much less serious disease than diphtheria. It may be brought on by cold, the inhaling of irritating fumes, or it may appear in the course of a simple cold.

The disease usually first shows itself at night. The child's breathing suddenly becoming hoarse and laboured, the characteristic "barking" cough develops within a few hours. Because there is difficulty in drawing a sufficiency of pure air into the lungs, the lips become bluish and the general complexion pallid. There is rarely much fever, but the pulse may be 130 per minute or more.

After a short time the laboured breathing and other symptoms of distress may pass off, and the child may sleep peacefully the rest of the night, only to



A PORTABLE IRON FRAME FOR USE WITH CROUP KETTLE

wake suddenly the following night with a similar attack. In severer cases there may be no passing off of the symptoms. On the other hand, increased difficulty of breathing, a higher pulse, and great restlessness may continue until the patient gradually sinks from suffocation.

In these cases there may be several degrees of fever at the height of the disease. Examination of the back of the throat may show a chamois leather-looking membrane covering the back of the throat, and extending down towards the larynx. The diagnosis between croup and diphtheria at this stage can only be made by examining bacteriologically the organisms found in the membrane.

**Treatment.** Place the child immediately in a hot mustard bath, two tablespoonsful of mustard to each gallon of hot water. After three or four minutes in the bath the little patient should then be put to bed between blankets, and a tent should be arranged over the bed into which a short

rubber tube from a steam-kettle should be introduced. The steam filling the tent being constantly breathed by the little patient has a soothing effect on the irritated and inflamed throat surfaces. A teaspoonful of Friar's balsam, added to the water in the tea-kettle, increases the soothing effect of the steam.

Hot bread poultices placed over the front of the throat, and changed as soon as they begin to cool, often give relief. A full dose of castor oil, one to two teaspoonsful—depending on the age of the patient—may be given at the start of the attack.

Sometimes a sharp attack of vomiting will lead to a clearing out of the upper air passages as well, thus relieving the difficulty in breathing. To bring about such vomiting a half to a teaspoonful of wine of ipecacuanha may be given every quarter of an hour until vomiting occurs. After all symptoms pass off, the child should be particularly protected from dampness, draughts, or chill. Sometimes growths in the nose or enlarged tonsils may induce a tendency to croup, so these should be looked for and removed if found.

*For treatment of diphtheritic croup see under DIPHTHERIA.*

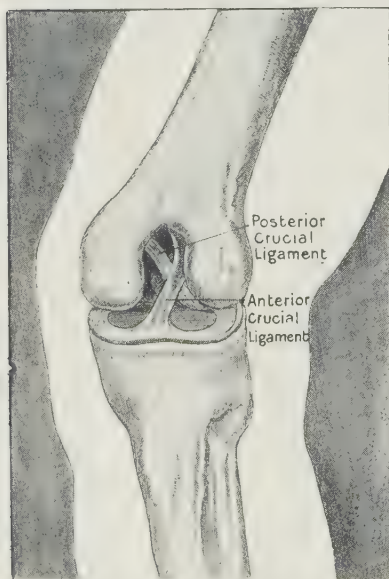
**SPASMODIC CROUP OR LARYNGISMUS STRIDULUS.** In this variety of croup there is little or no previous hoarseness or cough, but the child suddenly stops breathing, and the face becomes purple (*see also page 391*). Then suddenly it succeeds in again drawing in the breath, a peculiar crowing sound resulting (**CHILD CROWING**).

Although the child appears perhaps to be in immediate danger of death from suffocation, the spasm of the larynx which prevents the breathing practically always passes off, allowing full breath to be drawn.

**Treatment** consists of trying in every way to build up the general health of the child. Any irregularities of diet should be seen to, constipation should be remedied, and if rickets is present the disease should be actively treated. (*See RICKETS.*) Should attacks follow close upon one another, place the child in a hot bath and sponge the head and neck at the same time with cold water.

**CRUCIAL LIGAMENTS.** The crossed ligaments within the knee-joint which prevent bending forward at the knee.

**CRURAL** means relating to or connected with the leg.



DIAGRAMMATIC SECTION OF KNEE-JOINT  
SHOWING CRUCIAL LIGAMENTS



**CRUTCH PALSY** is paralysis affecting the arm and sometimes the wrist and hand of people who use crutches. The palsy is due to injury to the nerves by pressure of the crutch handle.

**CRYSTALLINE LENS.**

The bi-convex lens of the eye which focuses objects on the retina at the back of the eyeball. (See EYE.)

**CUBEBS** is the unripe fruit of a Javanese plant. The dose is thirty to sixty grains. The drug is most commonly used in the form of the oil—five to twenty drops suspended in a mucilage.

Like many other volatile oils, the drug is rapidly absorbed into the blood, stimulating the heart.

Its chief use in medicine is in the form of lozenges, or in cubeb cigarettes, to stimulate the lining membranes of the nose and throat in bronchitis, chronic catarrh, hay fever, and asthma. It is also largely used in gonorrhœa and chronic inflammation of the bladder.

**CUPPING**, formerly one of the commonest methods of treatment, is now rarely resorted to except in cases where the physician wishes to draw blood to the surface with a view of removing congestion of deeper lying organs or parts.

Cupping is still used, therefore, in acute Bright's disease, and certain lung and heart troubles where it is necessary to relieve congestion in deep-seated organs.

**Dry Cupping.** A small glass cup resembling an ordinary thick jam-glass is used. A few drops of methylated spirit are placed in the cup and lit, and just as the last of the spirit is flaming up the cup is suddenly and tightly pressed over the skin of the part to be cupped. As result of the vacuum formed, the whole portion of skin contained in the mouth of the glass swells up into a reddish mound, the skin vessels at the same time dilating and rapidly filling with blood.

From one to six cups may be placed over the kidney region, for example, the excess of blood in this way drawn to the skin and away from the underlying



CUBEBS, PLANT AND FRUIT

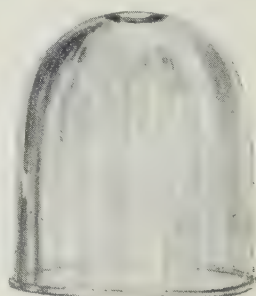
Hinkins

kidneys often having pronounced beneficial results. In dry cupping, while the blood is drawn away from one part of the system it is simply diverted into other vessels.

**Wet Cupping**, on the other hand, not only relieves congestion, but also removes the excess of blood from the body. Here the skin is first scratched with a sharp needle or cupping scarifier, and then the cupping glasses are applied to the bleeding surfaces exactly as in dry cupping.

As there is always danger of blood poisoning from infection unless strictest antiseptic precautions are taken, wet cupping should never be resorted to except by the physician.

**CURRETAGE** is the scraping away of diseased tissue in the womb or the rectum, as in cancer of the rectum. It is carried out by means of an instrument called a curette. (See WOMB, DISEASES OF.)



CUPPING GLASS

**CURVATURE OF THE SPINE.** The spinal column or backbone may be bent to one side, arched backward, or arched forward, more or less deformity being caused in each case.

The first form of curvature is called *scoliosis* or lateral curvature, the second *kyphosis*, and the third *lordosis*.

Besides these, there is a much more serious condition, *angular curvature* or Pott's disease. This is due to caries of the spine, which is a tuberculous ulceration of one or more of the vertebræ.

**SCOLIOSIS.** The back is curved to one side or the other in two or more places. Most commonly the first and chief curve, situated about the middle of the back, is arched to the right. Then there may be two compensatory arches to the left, one above and the other below the main curve.

This type of curvature is most common in young girls of fourteen years and upwards. Occasionally it is present at birth. In other cases it begins as early as the fifth year. There sometimes seems to be a hereditary tendency towards lateral curvature, several generations of a family developing the condition.

The great predisposing cause is weakness of the back muscles and general debility. Girls or boys so affected readily develop curvature if they assume faulty postures, of which the following are the principal ones :

Writing at a low desk with one shoulder higher than the other.

Carrying a weight habitually on one arm, as in the case of a nursemaid.

Standing frequently with the weight on one leg.

Sitting with the legs crossed.

These attitudes produce unequal pressure on the vertebral discs, and so give rise to the curvature.

Other causes which may bring about lateral curvature are knock-knee, unequal length of the legs, dislocation of the hip from birth, and paralysis of the muscles of the back on one side. Occasionally it is associated with lumbago and sciatica.

Parents should be on the look-out for the beginning of curvature in weakly children, for if neglected too long, it may be incurable. A child with weak back-muscles is easily fatigued, and is apt to assume the positions mentioned above. When this is observed, the signs of curvature should be looked for.

Usually the first thing a mother notices is some want of symmetry in the child's figure. One shoulder, usually the right, appears higher than the other, a point often noticed first by the dressmaker. The shoulder-blade or the hip may be seen to project. The child may complain of pain in the back and shoulders.

If she is stripped to below the waist so that the upper part of the hip-bones are uncovered, her shoes taken off, and she is placed standing with her back to a good light, the following points may be noticed :

The angles of the shoulder-blades are not on the same level.

One ear is higher than the other.

The upper border of one hip is higher than the other.

If the arch of the curve is to the right, the ribs project on the right side, and the chest is flattened on the left.

Examined from the front, the chest is prominent on the left side, and flattened on the right.

One nipple may be higher than the other.

The degree of seriousness of the affection may be tested in the following way :

Let the child hang by the hands from a bar, or lift her, with the hands in the armpits.

Then, if the curve disappears, there is every chance of curing it. If it does not, the probability is that it cannot be completely cured, although it may be improved.



LATERAL SPINAL CURVATURE IN A GIRL  
(From a drawing in the St. Bartholomew's Hospital  
Museum.)



SEVERE LATERAL CURVATURE OF THE SPINE  
(From a case at St. Bartholomew's Hospital)

As the deformity increases, the muscles and ligaments become altered in length, the internal organs are displaced and pressed out of their natural shape, the trunk is shortened, the limbs appear disproportionately long, and the patient walks with an awkward gait. There may be shortness of breath owing to the deformity of the chest, and sometimes dilatation of the heart follows.

While the middle of the back is usually the site of scoliosis, and the arching is most commonly to the right, sometimes the curvature is lower down, in the lumbar region or "small of the back." This is more common in boys than in girls.

**Treatment.** Faulty positions must be corrected. When reading, writing, sewing, playing the piano, etc., the child must sit square and hold the back straight. A desk for writing should have a good slope ( $45^{\circ}$ ). The child should not lounge in an easy-chair when reading, but sit in a chair with a straight back, and hold herself well up. A special chair for this condition is very useful. The seat is low and slopes towards the back; the back should reach to the top of the shoulders, and be placed at an angle of 100 to 110 degrees with the seat.

The child should frequently practise correct posturing before a mirror. She should avoid much standing, and never rest the weight on one leg. Regular exercise must be taken, the best forms being walking, running, tennis, hockey, gentle rowing, and horse exercise—riding astride. Swinging from a trapeze bar is a good measure to straighten the back.

The following exercises (Thomson and Miles) may be practised daily, and are best done before a mirror:

(1) Stand straight, with the shoulders held back, the arms hanging by the sides, the palms forward.

(2) Raise arms to a level with shoulders, the palms forward. Then raise left arm straight up if the curvature is right-sided, the right arm if it is left-sided. Lower this arm to level of shoulder. Lower both arms to sides.

(3) Slowly bend the body forward from hips, keeping the legs straight and the head bent slightly backward. Resume upright position.

(4) Slowly bend body to right in right-sided curvature, to left in left-sided curvature.





HOW SPINAL CURV-  
ATURE MAY BE  
INDUCED BY WRONG  
ATTITUDE AT THE  
DESK

Here the upper two-thirds of the spine is not only bent forward but is curved to one side. The left shoulder is bent downwards and forwards and the whole spinal column is rotated on itself.

The head is also held on one side causing the eyes to be on a different plane to the line of writing, and leading to eye-strain and further general fatigue of the body muscles.

CORRECT ATTITUDE  
FOR A CHILD WHEN  
WRITING

Here the eyes are level with the line of writing, the shoulders are level, the spine is straight, the pelvis is level, and the shoulder blades are both flat against the back. The seat is deep enough to support the thighs without interfering with the bending of the legs at the knees.



- (5) Rise on toes ; bend knees ; straighten knees ; drop to original position.
- (6) Lie on back and bend legs at knee and hip-joints, while someone holds the foot and exerts slight resistance to the movement.
- (7) Still lying on back, straighten out the legs while someone offers resistance.
- (8) Lie face downward, with pillow under chest, and slowly move arms over the head.
- (9) Still lying on the face, make swimming movements.
- (10) Sit astride a bench or narrow chair and slowly bend the body forwards. While someone holds the shoulders and exerts slight resistance, twist the body round to right and left. Bend the body to the right and to the left. Make swimming movements.

Exercise, of whatever kind, must never be carried to the point of fatigue. After it, on each occasion the child must lie down for half an hour. Besides these short rests, she must lie on her back for two hours every day.

Massage of the back, carried out daily, is of great service in strengthening the muscles. At the same time the general health must be attended to. Some bracing tonic is generally useful in these cases.

The following tonic would be suitable here for a boy or girl of fifteen years :

R

Solution of ferric chloride	..	..	..	4 drachms
Spirit of chloroform	..	..	..	4 ..
Glycerin	..	..	..	5 ..
Infusion of quassia	..	enough to make	12 ounces	

Make into a mixture. Take one tablespoonful three times a day in a little water after meals.



EXERCISE FOR LATERAL CURVATURE



STRAPPED POSITION TO STRAIGHTEN BACK

(Photographen in the St. Bartholomew's Hospital Gymnasium.)



NORMAL SPINE

CURVATURE IN KYPHOSIS

CURVATURE IN LORDOSIS

The child should have a change of air when practicable. Corsets and jackets to support the back must be avoided, except when prescribed by the surgeon in extreme cases. They usually do harm by compressing the muscles and keeping them weak. In cases due to or increased by shortness of one leg, a cork sole and high heel should be used to make up for the deficiency.

Even when a case is not curable, the foregoing treatment should be carried out, for it may effect some improvement, and will prevent further development of the deformity.

**KYPHOSIS** is an increase of the natural backward arch of the spine from the neck down to the small of the back. It may occur in rickety infants, in girls or boys with weak back muscles, and in grown people who follow stooping occupations. If the infant is treated for rickets and kept in a lying position, the curve will in nearly all cases disappear as he gains strength.

In growing girls, this form of curvature develops from the practice of stooping when writing, reading, sewing, etc. Short sight is sometimes answerable for this faulty habit.

The treatment is the same as for lateral curvature (*see SCOLIOSIS above*). Glasses should be worn when the sight is defective. It should be remembered that a weak, growing girl finds it very difficult and at times impossible to keep sitting straight up for long periods. It is, therefore, useless to reprove her, unless measures be taken to strengthen her back muscles and her general health.

Among adults the people who commonly suffer from kyphosis are bootmakers, tailors, and men who carry loads on their backs. But sometimes the cause is rheumatoid arthritis or osteitis deformans (*which see*).

It is sometimes difficult to distinguish this comparatively harmless condition from the serious angular curvature of Pott's disease. The following points will clear up the diagnosis:

In angular curvature there is usually tenderness on tapping the spine, the patient suffers some pain, and the spine is more or less fixed in its bent position; in kyphosis none of these symptoms are present.

If a child with angular curvature is laid flat on its back, the curve will persist; in the case of a rickety child with kyphosis the curve will disappear.

**LORDOSIS** is an exaggeration of the natural forward arch in the lumbar region (lower part of the back). It is most commonly seen in tuberculous disease of the hip, and in dislocation of the hip from birth. The curve forms to compensate for the tilting forward of the pelvis.

This curvature sometimes occurs in very fat persons, in pregnant women, and in persons who carry weights in front of their bodies, as street-hawkers who carry trays.

**ANGULAR CURVATURE, OR POTT'S DISEASE**  
(also called Caries of the Spine).

This is popularly known as "disease of the spine." Tuberculosis attacks one or more of the vertebræ, as a result of which the bones, as well as one or more of the cartilage discs between them, decay and crumble away. The part of the backbone above the point of disease then settles down on the part below, and bending forward results. If only one vertebræ is destroyed the back bends at an angle, the pointed bony tip of the vertebræ above the diseased area sticking out. If several vertebræ are attacked, the bending is in the form of a curve.

The disease may occur at any age, but at least half the cases are met with in children under ten. Frequently it follows a blow on the back or a strain. Sometimes no pus forms, and the disease is called "dry caries." More commonly there is an abscess, which may open at a considerable distance from the diseased part.

The disease comes on insidiously, and may not be noticed until great damage has been done. Usually the mother first notices that the child is



ANGULAR CURVATURE, OR  
POTT'S DISEASE OF THE  
SPINE

This is a tuberculous disease in which one or more vertebræ are eaten away, leading to sharp curvature of the spine.



easily fatigued, and is disinclined to stand for any length of time, or to walk far. He complains of a gnawing pain in the back, which is increased by stooping or by a jar of the body when he jumps or goes quickly downstairs. The pain may be absent after a night's rest, but comes on again in the course of the day. The child is inclined to sit down frequently. There may be a pain in the abdomen, and sometimes around the body, as if a string were tied tightly round it (the girdle pain).

An early sign is stiffness of the diseased portion of the spine. If the hand is laid flat over the painful part and the child is told to stoop, it will be found that each vertebræ does not move separately, but several en bloc.

Any part of the spinal column may be attacked by this disease.

If the cervical (neck) region is involved, the child pushes his head forward, and carries it stiffly. Later the head may be drawn back, or bent to one side. Pain is felt in the neck, and the child may be seen frequently supporting the head with his hands. If he wants to look sideways, he turns the whole body, not the head alone.

When lower down, involving the lower neck and upper back vertebræ, the disease often causes an extreme degree of hump-back.

Still lower, in the dorsal region about the middle of the back, great stiffness is produced. When the child wants to pick up anything from the floor he keeps the back rigid and bends the legs at the knees and hips, or kneels on the floor. Returning from this position, he "climbs up his legs," by placing the hands first on the knees and then on the thighs. He will not jump or do anything which jars the spine. This backward curve is usually compensated by an arching forward of the spine above and below, so that the patient can stand erect.

When the site is lower down, in the lumbar region, no compensatory curve can be formed, and the child stoops forward. He often eases his back by resting his hands on his legs. Pain is often felt in the abdomen, and it may be mistaken for an ordinary pain in the stomach, though due to disease of the spine.

Still lower down, in the lumbo-sacral region, the disease may cause deformity of the pelvis, a serious injury in the case of female children, as later in life it may cause difficulty in childbirth. In this situation caries is more common in young adults than in children. It gives rise to little or no deformity, and may not be diagnosed until an abscess forms.

Abscesses are common in this disease. They are sometimes very large. They come to the surface in various situations according to the site of the tuberculous disease. When the cervical (neck) spine is implicated, the abscess may project towards the back of the throat, and make swallowing difficult. If it bursts in the throat it may suffocate the patient. Sometimes it comes to the surface externally, on the side of the neck.

An abscess lower down may "burrow" into the chest, the armpit, or the chest cavity, or it may come to the surface still lower, in the mid-back region. The abscess may point externally, at the sides of the backbone, or it may make its way forward, and point about the middle of the ribs. This abscess, and that associated with disease a little lower in the back, often spreads down into the sheath of the psoas muscle, and comes out into the groin. Less commonly abscesses come to a head in the thigh and in the buttock.

**Treatment.** The usual measures for tuberculosis in any part of the body are to be carried out. (*See CONSUMPTION, TREATMENT OF.*) In addition, complete rest must be secured for the spine. The child must be kept constantly lying on a hair mattress in bed, or on a specially made couch. Sheets must be removed without lifting the child. The clothing should open at the back, so as to be taken off without disturbing him. A bed pan must be used.

To keep the child still the following is a good plan. Place a thin steel lath (a bed lath) covered with flannel, under the child's shoulders and tie the ends to the bed. Then fix loose rings of some soft material round the lath and the upper part of the child's arms. The arms can then be moved while the back is kept at rest. In most cases it will be necessary to immobilise, or secure more complete rest for the spine by means of systems of pulleys and weights attached to the head and legs. The necessity for these and the particular apparatus to be used, the surgeon in charge of the case must decide.

A simple yet efficacious method of keeping the spine at rest is to place the child in a plaster jacket for some months. As a rule, however, plaster jackets and other appliances of the kind are not to be used in the early stages while the disease is active. Later they may be useful to give support and allow the patient to get about.



RIGIDITY IN POTT'S DISEASE, OR  
ANGULAR CURVATURE OF THE SPINE

This test is, of course, only to be carried out by the physician, otherwise serious harm may be done.

The rest treatment must usually be continued for a year or two until the active tuberculous disease is arrested. Then the patient may get up, but for some variable time longer he must wear splints or other supporters.

The room occupied by the patient should be airy and sunny. If possible, he should be taken to the country or the seaside. His diet must be abundant and nutritious. (*See CONSUMPTION.*) The bowels should be kept regularly acting. Tonics will be prescribed by the doctor, and cod-liver oil if it agrees with the patient. A useful cod-liver oil tonic, suitable for a young child, is :

R						
	Cod liver oil	..	..	..	..	2 ounces
	Gum acacia powder	..	..	..	..	4 drachms
	Spirit of anise seed	..	..	..	..	$\frac{1}{2}$ drachm
	Spirit of chloroform	..	..	..	..	I "
	Iron wine	..	..	..	..	2 ounces

Make into a mixture. Give one teaspoonful twice or three times a day after food.

**CUSPARIA** is an aromatic bitter, closely similar to calumba in its properties and uses. It is obtained from the bark of a South American tree. The doses of the two preparations used in medicine are :

Infusion of cusparia	..	..	..	..	1 to 2 fluid ounces
Concentrated solution of cusparia	..	..	..	..	$\frac{1}{2}$ to 1 fluid drachm

**CUTANEOUS** means belonging to the skin, as cutaneous eruption (a skin eruption), cutaneous nerves (the nerve endings of the skin).

**CUTICLE.** The outer layer of skin lying over the derma or true skin.

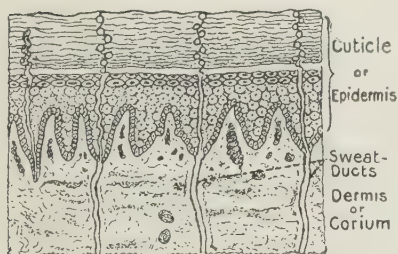


DIAGRAM SHOWING CUTICLE

There are no blood-vessels in the cuticle, and a cut will not bleed unless it penetrates it and reaches the true skin.

**CUTS.** Slight clean-cut wounds, as with a knife, should be cleansed by holding under a tap for a few moments, or by dropping cold water on to them from a sponge or piece of lint. Carbolic acid lotion (1 in 40) or a solution of boric acid is better than plain water. As soon

as bleeding stops bring the edges accurately together, sprinkle on a thin covering of boracic powder, and put on a clean cotton bandage. Even very small cuts should be cleansed in this way and protected from infection, particularly in the case of persons who have slow-healing flesh. A little boric ointment on a piece of linen will prevent festering, or the wound may be covered with flexible collodion which does not wash off. Whenever festering occurs in a cut, it should be dressed with some antiseptic, such as boric, salicylic, or cyanide gauze.

A cut of any size, or a deep cut which bleeds profusely should be covered over with a towel soaked in cold water (or better still a 1 in 40 solution of carbolic acid and water) while waiting the surgeon's arrival. Efforts should be made to control the bleeding by applying a tourniquet or by pressure on the vessels supplying the part. (*See under BLEEDING.*)

**CUT THROAT.** If the large vessels at the side of the neck are severed, death takes place rapidly from hæmorrhage. When a large vein is wounded, air may enter it and cause immediate death. Division of the windpipe may have a fatal result from asphyxia, the lungs being unable to get their supply of air; or in this case blood may trickle down the windpipe and block it.

The consequence of wounds of the throat when the patient does not immediately die may be inflammation of the windpipe and bronchial tubes, or an accumulation of air in the tissues above the throat. The patient may have difficulty in swallowing food, or be quite unable to swallow it; he may lose his voice, or his breathing may be obstructed.

All that can be done as first aid until the doctor arrives is to stop the bleeding as much as possible by pressure with the fingers.

**CYANOSIS.** Whenever oxygen is prevented from reaching the blood, as when breathing is temporarily stopped from any cause, a blueness or cyanosis of the nails, ears, lips, and cheeks gradually develops.

Cyanosis is an urgent sign that suffocation is approaching. It is a common symptom in advanced heart disease, in certain types of lung disease, and wherever there is any blocking of the great air tubes leading to the lungs.

As cyanosis is simply a symptom and not a disease in itself, its treatment is included in the treatment of the ailment in which it develops.

**CYSTOSCOPE.** An instrument through which the interior of the bladder can be seen. It consists of a tube with an electric light at the end, which is passed through the urethra and inserted into the bladder. By means of an arrangement of mirrors, or by the use of a telescope, every part of the inner surface of the organ may be examined, and any disease, such as ulcers, tumours, etc., may be detected.

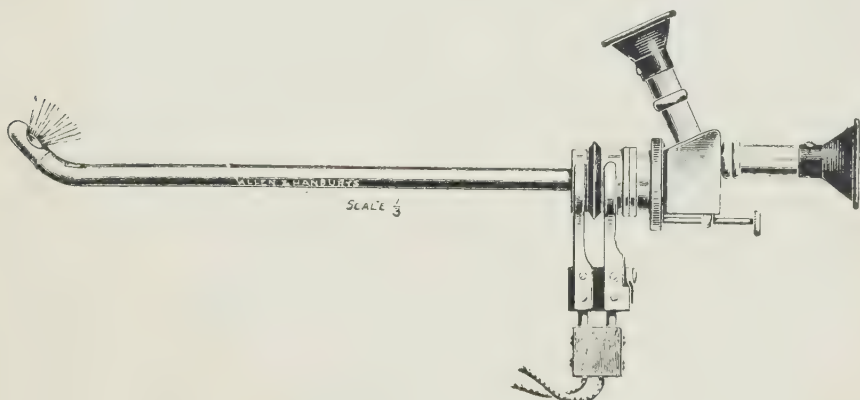
**CYSTITIS,** or inflammation of the bladder (*see also page 226*). One of the commonest causes of cystitis is germ infection set up by the use of a catheter not surgically clean. In this way a few germs are introduced into the bladder, where they speedily multiply and cause severe inflammation. In certain infectious diseases, such as typhoid, pneumonia, or gonorrhœa, the germs in the system may suddenly find their way into the bladder, and there set up an acute inflammation. A less severe type may develop as the direct result of exposure to cold or chill.



**Symptoms.** Sharp pain in the lower abdomen, the frequent passing of small quantities of thick, foul-smelling urine, perhaps streaked with blood, chills, and perhaps high fever are the chief symptoms.

**Treatment.** The patient should at once take a very hot sitz bath, as hot as he can stand it, the legs and the rest of the body not in the bath being carefully protected from chill by being well wrapped up. He should then be put to bed between warm blankets, and a hot turpentine stupe should be applied over the lower front part of the abdomen. The stupe is prepared by wringing out a small towel in as hot water as can be borne, and then, just before applying it to the skin, sprinkling on its surface a few drops of turpentine. As soon as the stupe begins to cool it should be replaced by a hot one. At four-hour intervals during the day the hot hip bath should be repeated.

For the first twenty-four hours nothing but milk should be given. Four tablespoonsful of milk, with perhaps a little soda-water added, every two hours, will be sufficient for the patient's nourishment, and will throw the



THE ELECTRIC CYSTOSCOPE, WITH OBSERVING TELESCOPE

minimum strain on the excretory organs. As the symptoms die down, custards, junket, eggs, milk puddings, etc., may be added to the diet. The patient may have as much water or mineral water as he likes during the day, as a constant flushing out of the bladder is desirable. In some cases the irritation is largely due to the acidity of the urine. Here the following mixture, which is both alkaline and antiseptic, may be tried :

℞	Potassium citrate	..	..	..	..	1½ drachms
	Potassium bicarbonate	..	..	..	..	3 "
	Infusion of buchu	..	..	to make	6	ounces

Take two tablespoonsful three times a day for the first two days.

In addition to keeping up an abundant flow of urine, it is most important that the bowels be free and loose. At the beginning of the attack, therefore, the patient should take one or two teaspoonsful of a mixture of equal parts

of confection of sulphur and confection of senna, to be followed next morning, if necessary, by a dose of Epsom salts.

If the pain is very severe and not controlled by the hot hip baths, rest in bed, and turpentine stupes, the physician may be forced to give a hypodermic injection of morphia or introduce a morphia suppository into the rectum. Later, as the acute symptoms pass off, the physician in attendance may often hasten the cure by careful washing out of the bladder with weak antiseptic solutions, such as silver nitrate, two or three grains to the pint of water.

Sometimes a strong, pungent odour from the urine, like ammonia, shows that it is highly alkaline, instead of acid. Here sandal-wood oil, in ten-drop capsules, may be taken three times a day, or urotropin, ten grains three times a day, until the ammoniacal odour disappears from the urine.

Cystitis, chronic, may develop in the course of gonorrhœa or tuberculosis of the kidneys, or it may set in as a secondary infection in any disease of the urinary system.

**GNORRRHEAL CYSTITIS.** The only useful treatment here is the daily washing out of the bladder with antiseptic solutions of increasing strength. Potassium permanganate, silver nitrate, and bi-chloride of mercury are often used, but as this treatment cannot possibly be undertaken satisfactorily by anyone but a surgeon experienced in genito-urinary work, no further description is needed here.

**TUBERCULAR CYSTITIS** is usually the result of tuberculosis of some other organ, such as the kidney, spreading to the bladder.

Little can be done in the way of active treatment in this very serious type of cystitis. The patient should, of course, build up his general condition as much as possible by getting a maximum of outdoor fresh air, keeping to an easily digested and not too stimulating diet, and avoiding over-fatigue, damp, and cold. Alcohol in every shape, as well as highly spiced and condimented food, should, of course, be avoided in this as in all other varieties of cystitis.

Treatment by hypodermic injections of tuberculin has recently given results sufficient to raise some hopes that a cure has at last been found for this hitherto most intractable disease. Tuberculin treatment, however, should never be undertaken except by a physician who has had wide experience of these methods, as otherwise active harm may be done.

**CYSTITIS, SIMPLE CHRONIC.** The commonest cause is some chronic obstruction to the flow of urine from the bladder. A stone at the mouth of the bladder, a gradually tightening stricture of the urethra (the tube leading from the bladder by which the urine is voided), or an enlarged prostate gland, by causing a constant back pressure of urine in the bladder, may lead to a chronically irritated state of the bladder walls. In other cases the inflammation may be due to intestinal bacilli or the germs of some disease, such as influenza or typhoid, finding their way to the bladder.

**Treatment.** The first step is to remove the cause (stricture or stone in bladder, etc.), if possible. Then any causative disease—influenza, typhoid, pneumonia, etc.—should be treated. Locally the bladder should be washed out once or twice a day with some soothing antiseptic lotion, the strengths of which the physician in attendance will have to decide after carefully considering the patient's state. Unskilled efforts at washing out the bladder are most dangerous, as unless the strictest antiseptic precautions are carried out, other germs, in addition to those already present in the bladder, are certain to be introduced, thus further complicating the treatment.

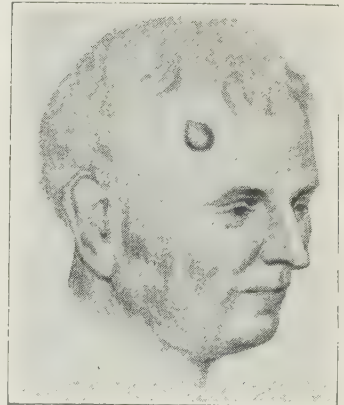
**CYSTS, OR CYSTIC TUMOURS,** are hollow cavities containing fluid or semi-fluid material. They are of various types. Some are cavities which naturally contain a little fluid, and which from some cause have become greatly enlarged. Other cysts form where no cavities previously existed. Others are present at birth as a result of some faulty development.

(1) Of the first class, examples are: the bursæ of joints, such as the knee and elbow, which may become distended by exuded fluid; the ganglions which are formed on the sheaths of tendons—a common seat being at the wrist; and ranula, a swelling of a salivary duct which occurs under the tongue.

Wens are cysts caused by blockage of the ducts leading from sebaceous glands (oil glands) in the skin. Mammary cysts occur in the breasts, frequently from blocking of milk ducts. Cysts of this kind also occur in the kidneys, the external genital parts of the female, the pancreas, and other parts.

(2) Cysts formed where no cavity previously existed may result from the presence of parasites. An example of this variety is the hydatid cysts formed in the liver and other parts by the parasite which exists in the larval state as the tape-worm of the dog. Cysts of this type may develop round any small foreign body buried in the tissues. They occasionally occur, for instance, when little particles of skin are forced inward by some instrument causing a wound. Blood cysts are also included in this class. Some of these contain clear serous fluid, others contain blood; and, if emptied, these latter immediately fill again.

(3) Developmental, dermoid, or congenital cysts. These may begin in the ovaries of female children. They grow slowly, but in adult life they often reach a great size. Cysts of the same kind occur in the kidneys and other parts. What are called sequestration cysts commence during the development of the child in the womb, but usually do not attain any considerable size until adult life.



SEBACEOUS CYST OR WEN  
Due to blockage of ducts from sebaceous glands of the skin, cysts may last for many years without causing appreciable inconvenience. From Guy's Hospital.

They occur in such places as the corners of the eyes, the sides of the neck, and down the middle of the front aspect of the body. Some of these contain hairs, skin cells, fatty material, fragments of bone, etc. Occasionally teeth have been found within them.

Cysts may grow to a large size without causing any inconvenience.

**Treatment.** When treatment becomes necessary it should consist of cutting out the entire cyst, if practicable. Sometimes the cyst is opened, drained, and injected with iodine or carbolic acid, but this treatment is not often successful. In case a cyst occurs in the breast, a surgeon should be consulted immediately, as sometimes there is also a developing tumour in connection with it.

## D

**DANCING MANIA** is the name given to a form of hysterical excitement manifested in gesticulations and dancing, which was common in the Middle Ages. We still have occasional outbreaks in neurotic people suffering from great religious emotion. The human nervous system, however, nowadays seems more healthy and less subject to hysterical agitation than in former generations.

**DANDELION** is sometimes used in medicine as a simple bitter and stomachic. Its action is closely similar to that of calumba.

The official preparations are :

The extract of dandelion root	dose	5	to 15	grains
The liquid " " "	"	"	$\frac{1}{2}$	to 2 drachms
The juice " " "	"	"	1	to 2 "

**DANDRUFF OR SCURF** (*see also under* BALDNESS) shows itself as an accumulation of yellow or grey scales of dried fatty material occurring on the scalp, eyebrows or in the beard. In extensive dandruff there is usually pronounced falling of the hair.

Dandruff is due to some disorder of the fat-producing glands in the scalp or skin, resulting in an increase of altered secretion of these glands, producing an oily or scaly condition of the skin.

In many cases germs which have attacked the scalp itself are the actual cause of the dandruff.

Dandruff should not be allowed to continue indefinitely, as in long-standing cases affecting the scalp it almost invariably leads to baldness in the end.



**Treatment** should be internal as well as external. Pills of chloride of calcium, one-tenth of one grain, three times a day after meals have been recommended as exerting a tonic influence on the scalp and its glands. Easton's Syrup, a half-teaspoonful to a teaspoonful three times a day after meals is also useful as a general tonic.

**Local Treatment.** The first step is to remove, as far as possible, the crusts and scales on the scalp. A little of the following oily lotion, well rubbed in, will soften the accumulated dandruff:

R

Salicylic acid	..	..	..	..	..	15 grains
Olive oil	..	..	..	..	..	3 ounces

    Rub a little well into the scalp.

After this, shampoo the head well with tincture of green soap, which can be obtained from any chemist. This will remove the loosened dandruff and allow the following preparation when rubbed in to reach the glands, whose faulty secretion is the cause of the dandruff:

R

Resorcin	..	..	..	..	..	2 drachms
Castor oil	..	..	..	..	..	1 drachm
Strong bay rum	..	..	..	..	..	6 ounces

    Rub into the scalp thoroughly for five minutes nightly, for a week, at bedtime.

*Note.* Resorcin discolours light hair and this lotion should not be used by fair-haired persons.

In place of the above treatment the following sulphur ointment sometimes gives most excellent results:

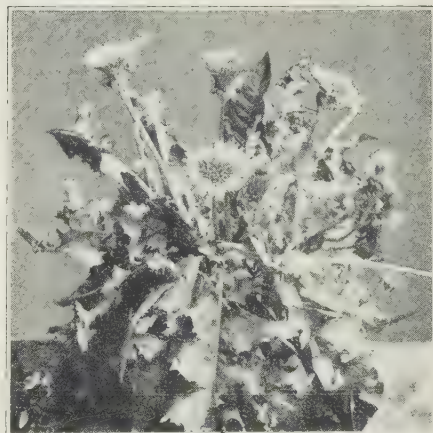
R

Precipitated sulphur	..	..	20 grains
Salicylic acid	..	..	10 grains
White vaseline	enough to make	1 ounce	

    Rub thoroughly through the roots of the hair one night, and next morning shampoo well with very hot water and soap. Apply ointment once a week afterwards.

Sufferers from very slight dandruff should not wash the head too frequently. Once in three weeks is sufficient. In these mild cases the following wash is often enough to keep the head clear of scurf without the use of special ointments or lotions.

Beat up a teaspoonful of rectified spirits of wine with the white of an egg. Rub this thoroughly into the scalp with the finger-tips, and then shampoo the head well, when the scalp will be found quite clean. A simple shampoo, much more suitable than soap, for those who suffer from dandruff is made by



THE DANDELION, USED AS AN OLD-FASHIONED STOMACHIC

beating up the yolks of two eggs with one ounce of spirits of rosemary. Use this with or without the addition of a little tincture of green soap. To make the hair less greasy a teaspoonful of ammonia may be added to the last rinsing water.

**DANDY FEVER.** *See* DENGUE.

**DAY BLINDNESS** is a rare condition in which objects cannot be clearly seen in bright light without making a painful effort, while vision is good in twilight. It sometimes occurs in scurvy.

**DEAD, DISPOSAL OF.** Burial and cremation are the two common methods of disposal of the dead in this country. Whereas burial is hallowed by a long-standing custom, it is undoubtedly a less sanitary method of disposal of the dead than cremation. Because of the risks of infection of the living, cemeteries nowadays are usually situated outside of towns and away from habitations. (*For description of CREMATION, see under that heading.*)

**DEAD FINGERS OR TOES.** This is a name sometimes given to a mild form of Raynaud's Disease, an ailment which affects the blood vessels. Usually after exposure to cold, or following some mental emotion, the fingers, or the fingers and toes, become cold, and white. This condition lasts, as a rule, for about an hour and then the fingers become red and intensely hot, either all at the same time or one after another. In some cases chilblains and great swelling of the fingers and occasionally of the hands appear later. Still later, gangrene may develop, causing loss of the fingers and sometimes spreading up the arm.

**Treatment.** The patient should have nourishing food and frequent exercise in the open air. He should always wash in tepid water, avoiding both cold and very hot water. Warm clothing should be worn, the feet and hands especially being kept warm by thick socks, roomy boots, and woollen or lined gloves. When the toes are badly attacked the patient should remain for a time in bed, wrapping the toes in cotton wool, and keeping the room warm with a good fire. (*See* RAYNAUD'S DISEASE.)

**DEADLY NIGHTSHADE.** The common name for the belladonna plant. The berries of the plant from which both belladonna and its active principle atropine are obtained are a very virulent poison. (*See* ATROPINE *and* BELLADONNA *pages* 156 *and* 204.)

**DEAFNESS** may be caused by injury or disease to any of the three portions into which the hearing apparatus is divided.

These are (1) the external ear, which includes all the parts external to the drum, (2) the middle ear, extending inward from the drum, containing the three small ear bones (the so-called anvil, hammer, and stirrup), and (3) the internal ear, also known as the labyrinth, which contains the nervous structures essential to hearing. (*See* EAR.)

Deafness may result from a foreign body blocking up the entrance to the ear and so preventing sound waves from reaching the drum. Children frequently cause this variety of deafness by poking buttons or hard peas, etc., into their ears. In middle-aged people gradually developing deafness is sometimes due to collections of ear wax against the outer surface of the drum.

**Treatment of Deafness Due to Outer Ear Trouble.** Where a foreign body is blocking up the ear passage, treatment consists of removing the same. No sharp instrument, however, should ever be introduced into the ear, as there is always great danger of the drum itself being injured. Where impacted or hardened wax is the cause of the deafness a drop of olive oil in the ear overnight and *gentle* syringing with a ten per cent. solution of boracic acid and hot water the next morning may be the only treatment needed.

Care should be taken not to block up the ear passage with the point of the syringe. The stream should be pointed not directly against the drum, but against the roof or floor so that the solution may have free egress.

If the wax does not come away easily by these means, never attempt to remove it with any hard or sharp instrument, otherwise serious and perhaps permanent injury to the drum may result. This is a striking example of a case in which a visit to a thoroughly competent doctor or ear specialist may save unlimited expense and discomfort afterwards.

If the hard object in the ear is a dried bean or pea, syringing with warm water is likely only to make it swell and increase the difficulty of removing it. Here, too, the patient should at once be taken to a physician.

**Middle Ear Deafness** is a much more serious complaint. Because this division of the ear connects with the collection of large hollow spaces in the skull behind the ear as well as with the throat itself (through a tiny passage called the Eustachian tube) serious middle ear inflammation, with resulting deafness, may follow on the spread of any inflammation from these parts. An example of this is the hardness of hearing frequently complained of by chronic sufferers from nasal catarrh. Here the nose inflammation spreads along the Eustachian tubes, preventing the normal passage of air into the middle ears and so interfering with the hearing.

Diphtheria and scarlet fever are often complicated by middle ear disease, the inflammation spreading to the lining membranes of the middle ear.

In long-standing chronic inflammation of the middle ear with persistent discharge the hearing usually becomes gravely affected.

Where the deafness is the result of the spread of catarrh of the nose and throat along the Eustachian tubes connecting these parts with the middle ears, treatment directed against the catarrh will often greatly relieve the deafness and improve the hearing. The following lotion used as a gargle or as a spray

for the nose and throat, several times a day, often gives excellent results in these cases :

R	Sodium bicarbonate	..	..	..	..	1½ drachms
	Listerine	..	..	..	..	6 "
	Water	..	..	..	enough to make	6 ounces

A cheap spray bottle suitable for use with this lotion can be obtained for a few pence from any chemist.

Where there is or has been acute inflammation of the middle ear, with discharge through a perforation in the drum, nothing can be done towards improving the hearing until the discharge has been stopped and the inflammation soothed. Treatment here consists of syringing the ear two or three times a day with a warm solution of boracic acid, ten grains to the ounce. Very little force should be used, and the syringe should be directed against the roof of the ear passage, which should be straightened out by pulling the top of the ear a little upwards.

These cases frequently demand operative treatment, and so should be seen from time to time by a competent ear specialist. If neglected, that is, if the discharge is allowed to persist untreated, not only does the deafness become more pronounced, but serious bone trouble (mastoid diseases—see EAR DISEASES) may develop, endangering the patient's life.

After syringing the ear, a little plug of cotton wool should be placed just within the outside opening, to prevent chilling.

**Internal Ear Deafness.** Here the actual nervous structures of the ear are at fault. In various brain diseases, inflammation of the coverings of the brain, and in severe fevers the nerves connecting the sounding-board part of the ear with the brain (which translates the vibrations of the drum into what we know as "sounds") may be seriously interfered with.

The treatment of this class of deafness is almost hopeless. If it does not pass off during the patient's convalescence from the disease which caused it, the outlook for future recovery is a very poor one. (*See further under EAR.*)

**DEATH RATTLE.** This sound results from the passage of air as the patient breathes through fluid which has collected in the windpipe or bronchial tubes when vitality is very low.

**DEATH, SIGNS OF.** In order that all possibility of being buried alive may be avoided, certain signs that life is extinct should always be looked for.

The only absolutely *certain* test that the patient is not in a trance, or some state similar to death, is the appearance of the early signs of putrefaction. This may be noted practically always by the third day (or sooner in warm countries) by a greenish-blue discolouration of the skin over the abdomen.

Stiffening or rigidity of the muscles is another very certain sign of death. Coming on from three to twelve hours after death, the rigidity lasts for two or three days, and then gradually disappears.



In certain types of trance the arms and leg muscles may be held rigid as boards. Here, however, if a joint be forcibly bent, as for example if a straight and rigid arm be bent at the elbow and held in that position for a moment, it will become rigid in this new position. On the other hand, if the rigidity be that of death, the arm would not become rigid in its new position, but once made flexible, would remain so.

Accumulation of the blood in dependent parts, such as the shoulder muscles, loins, or the buttocks of a body lying on the back, is another valuable proof that life is extinct. This congestion usually shows itself as large purplish stains on the skin closely resembling bruises.

Loss of heat is the fourth important sign of death. Within twelve to twenty-four hours after death the body will have lost all of its natural heat.

Such signs as stoppage of the heart, the absence of breathing, and the absence of heart beat, are negative signs which should not be relied upon alone, as the patient may be breathing and his heart may be beating, although so faintly as to escape the observation of the onlooker.

**DEBILITY.** Many people who suffer from no recognisable illness are constantly in a state of vague weakness which takes all the happiness out of life. Women are especially liable to this form of debility; they feel good-for-nothing; every little duty that before was a pleasure, now becomes a torment. The whole day is a weariness, and no effort avails to throw off the feeling of depression and despondency. Of course, in serious chronic diseases, such as cancer and consumption, or in convalescence from fevers, debility is to be expected. But why should a person, previously healthy, and still free from actual disease, fall into this distressing state? The causes are very numerous. Fortunately most of them are avoidable, or can be corrected.

Very often debility begins gradually as a result of chronic constipation. When the bowels are emptied only every second or third day, poisonous matters are being continually absorbed into the blood. The impure blood depresses the activity of the brain and nerves, and thus produces a feeling of weakness and heaviness of mind.

Now, the healthy action of the heart, lung and stomach muscles, etc., depends in great part on efficient nervous stimulation. Hence every organ shares in the depression. The remedy in this case is the cultivation of regular habits in emptying the bowel. In some mysterious way the bowels seem to read the clock, and if one is punctual in relieving them, they will seldom give trouble.

A person living a sedentary life should practice a few exercises with dumb-bells, clubs, or simply with the arms, legs, and body every morning on rising, and the last thing at night. These stimulate the intestines, give an onward impetus to their contents, and generally help toward regular action of the bowels.

Everyone knows the virtues of brown bread, stewed prunes, and green vegetables in preventing constipation. But the consumption of these articles should not be relied upon exclusively, or they will lose their virtue. The cure of constipation is dealt with under that heading, and anyone whose debility arises from that cause should attend to the directions given (*see page 474*).

Another common cause is faulty action of the liver. This organ is blamed for a great many more faults than it commits, and people often dose themselves with so-called liver drugs when the liver has nothing to do with their condition. But in women who wear tight corsets, in people who take little exercise, or who diet themselves luxuriously, or who consume a great deal of alcohol, the liver is frequently affected, with the consequence of bodily weakness and mental torpor. When constipation is present, it increases the trouble. The cure in this case involves, firstly removal of the cause; secondly, measures to stimulate the liver. Exercise is as necessary in this case as in constipation. A daily brisk walk, horse-riding, tennis, and other games, will help to set the sufferer right.

The following prescription is often useful in these cases where there is constipation dependent on sluggishness of the liver :

R	Podophyllum resin ..	..	..	..	6 grains
	Extract of belladonna ..	..	..	..	3 "
	Extract of nux vomica ..	..	..	..	6 "
	Extract of hyoscyamus ..	..	..	..	12 "
	Compound pill of colocynth	enough to make	1	drachm	

Make into 24 pills. Dose : One pill at night when required.

Mental overwork, depressing emotions, and the monotonous indoor life of many women frequently give rise to persistent debility. Unless the causes are removed, no remedy will be successful. The overworked man or woman should take a holiday, or at least reduce the amount of work and length of working hours. People who fret, worry, who constantly give way to irritability, anger, melancholy feelings, forebodings of misfortune, etc., should make a determined effort to shake them off and to take a cheerful, happy view of life. Difficult as this may be at first, it can be done by perseverance.

Faults as to nourishment are very often the cause of debility. One may grow weak not only from eating too little or unsuitable food. Many men become debilitated through eating too much, and a great many women through eating too little.

Obviously food is a factor of the greatest importance in this condition. It should be light, digestible, and nutritious. It should be dainty and tempting. Milk, eggs, fish, chicken, and game are the most suitable forms in which to take building-up protein. Toast, rusks, potatoes, beets, etc., rice and other puddings supply the heat-producing carbohydrates. Potatoes are best well mashed or baked. Among green vegetables, cabbage and the other coarser



ST. THOMAS'S HOSPITAL, ALBERT EMBANKMENT

At the top is a general view of the hospital buildings from the river. A children's ward is seen within the circle, and a women's ward at the bottom.

kinds should be avoided, as they produce indigestion and flatulence. Fruits will help keep the bowels regular and the blood healthy.

The use of beef-tea, alcohol, tea, and coffee should be very moderate. These stimulate the nervous system for a short time, and this may be an advantage, but their over-use disorders the digestion. There is no nourishment in beef-tea, as ordinarily prepared, and very little in calves' foot and other jellies. The exercise of a little common-sense will enable each patient to select the most suitable diet in his own case, and to avoid those things which disagree.

Chronic indigestion is a fruitful source of debility (*see* INDIGESTION.) If it is due to bad teeth, they should be attended to.

Want of sufficient fresh air, sunshine and exercise is a common cause of debility in a woman. However disinclined she may be to go out, she should spend two or three hours in the open every day. It does not suffice to saunter through the streets, looking at the shop windows. The outing must be an active one. The patient should visit friends living at a distance, and walk there. If she wants to make a purchase, she should walk a couple of miles to do it; she should always try to have some interesting object in going out, and when at all possible, take her outing with a pleasant companion. And during the walk she should not dwell on grievances, fears, and other depressing influences, but should try to be bright and happy.

Besides the foregoing causes, which are so largely under the patient's control, there are minor ailments leading to debility which need the doctor's attention. Loss of blood, for instance, may lead to a very prolonged condition of debility. Nothing is more weakening than a chronic discharge, and when this is present, medical advice should be obtained without delay.

In every case of debility sufficient sound sleep is essential. Nine or ten hours should be spent in bed. In more severe cases a week or longer in bed is one of the most serviceable measures. Rest is as necessary as open-air exercise, and the debilitated patient should lie down for half an hour two or three times a day, the best time being before meals. At the same time, one must not give way to too much languor and listlessness. These grow when yielded to.

Tonic medicines are useful in most cases. It is a great mistake, however, to take too many drugs or to dose one's self with medicines of unknown composition. In general debility, where no explicit cause can be found for the health being below par, a bracing tonic mixture such as the following often gives excellent results:

R

Iron and quinine citrate .. .. .	90 grains
Solution of strychnine hydrochloride .. ..	40 minims
Spirit of chloroform .. .. .	2½ drachms
Tincture of calumba .. .. .	1 ounce
Distilled water .. .. enough to make	8 ounces

Make into a mixture. Take one tablespoonful in a wineglass of water three times a day after meals.



**DECIDUA.** The membrane that lines the womb while the unborn child is developing. It is expelled after the child is born.

**DECLINE.** A popular name for consumption.

**DECOCTION** is the result of extracting the active principles of medicinal plants by boiling them in water.

**DECUBITUS** is the name applied to the posture assumed by a patient in bed.

In different diseases the patient assumes those positions which give most relief. Thus in severe pain on the abdomen the knees are usually drawn up to relax the abdominal muscles. In pleurisy the patient lies usually on the affected side; when in a state of great weakness he may slip down in the bed with the head off the pillow, etc.

From these postures a doctor may sometimes draw inferences which help to confirm his diagnosis.

**DEFÆCATION** is the act of emptying the bowels.

**DEFORMITIES** may be present at birth as the result of faulty development of the foetus in the womb, or they may be acquired in after-life. Examples of the former are hare lip and club foot; of the latter the curved spine of girls who habitually carry heavy children in their arms, or of school children who constantly stoop over the desk.

**DEGENERATION** is a harmful change in the substance of any organ or tissue of the body by which its vitality and usefulness are diminished. For instance, the powerful muscle of the heart may be so weakened as to result in death, by its conversion into a fatty substance (fatty degeneration); the liver substance may become waxy (amyloid degeneration), as sometimes happens in advanced tuberculosis of the lungs; the elastic coats of the arteries may become calcareous and hardened, as in arterio-sclerosis.

There are many forms of degeneration, of which the principal are the fatty, waxy, fibroid, calcareous, colloid, and mucoid.

Some of these, the fatty, fibroid and calcareous, are to a certain degree natural in old people; in fact, they are the cause of old age. In other cases they may be brought about by defective nutrition of a part, as, for instance, when a blood clot is carried to a small artery in some other part of the body and blocks it. The supply of blood in that area being cut off, degeneration follows.

Alcohol, phosphorus and arsenic are frequent causes of degenerations in various parts of the body. In some people a tendency to degeneration of one organ or another seems to be hereditary.

**DEGLUTITION** is the act of swallowing. It occupies about six seconds from the time the bolus of food leaves the mouth until it reaches the stomach.

**DELHI BOIL** (also called Oriental Sore). This disease, which may be communicated by the clothing of affected people, by mosquito bites, etc.,

begins as a small red spot, then a small swelling appears on which a scab is formed. The scab falls off, leaving an open ulcer. The ulcer is very slow to heal. As many as twenty or thirty ulcers may break out on the feet, hands, and face and neck. They may cause considerable subsequent deformity. Preventive treatment consists of scrupulous cleanliness, and attention to cuts or scratches of the skin.

**Curative Treatment.** The physician may first paint on a 2 to 4 per cent. solution of cocaine, then the following paste may be applied (Carr):

R  
 Arsenic .. .. 1 drachm  
 Soft paraffin .. .. 2 ounces  
 Make into a paste and mark "Poison." Spread a little on a piece of  
 chamois leather and apply to boil. Apply on three successive days.

Another lotion recommended by the same authority is composed of:

R  
 Carbolic acid .. .. 80 grains  
 Gum shellac .. .. 15 "  
 Castor oil .. .. 5 minims  
 Rectified spirit a sufficiency to make into a thick varnish  
 Apply with a brush to boil.

Colonel Scott Reid found the best treatment to be covering the sore with a plate of thin lead.

**DELIRIUM** may occur in fevers, as a result of serious accidents (traumatic delirium), from excessive consumption of alcohol (delirium tremens), and sometimes as an independent affection of which no definite cause can be found (acute delirium).

Low delirium is often a symptom of great weakness and exhaustion. The patient mutters continuously, taking no notice of people around him, picking at the bedclothes, and twitching his hands, arms, legs, and face.

In high or raving delirium the patient is wildly active, suffers from delusions, and in this state may jump from a window, assault a bystander, or commit some other mad act.

In the traumatic delirium sometimes following accidents and surgical operations the patient may be very violent, moving his limbs and talking incoherently without cessation for hours together, sometimes for days. When of low vitality or greatly exhausted the delirious patient may simply keep up a continual muttering, behaving like a sufferer from delirium tremens, except that there is no tremor of the muscles.

**Treatment** varies with the cause, delirium being a symptom, not a disease in itself.

In all cases the room should be kept well aired and as quiet as possible. The patient must be constantly watched, as his delusions may impel him to get out of bed, and even to commit suicide. In violent cases the straight

waistcoat may have to be used when proper attendants are not available. The best restraint can be exercised by one or two nurses, but it throws a great strain on their endurance. When the patient is weak, a sheet covering his body and fastened to the sides of the bed may suffice to quiet him. In some cases the wrists and ankles may be loosely tied to the bed. Sponging with warm water, or, when practicable, a warm bath, are useful soothing measures. Bathing the forehead with vinegar and water sometimes has a calming effect. Ice may also be applied to the head. (*See DELIRIUM TREMENS.*)

Among drugs, the bromides and trional are often prescribed. As a general rule, however, drugs give no relief unless administered in very large doses, and these may prove dangerous. The bowels should be kept regular by the use of some mild aperient. (*See APERIENTS.*) The diet should be fluid, chiefly consisting of warm milk, strong meat soups, chicken broths, etc.

**ACUTE DELIRIUM (BELL'S MANIA)** is a rare disease, almost entirely confined to women. It may follow shock or any great strain on the mind, and sometimes affects convalescents from fevers.

For some little time preceding the attack the patient is usually irritable and restless. Then quite suddenly she becomes wildly violent, her mind is filled with strange hallucinations, she talks incoherently without ceasing, and finally sinks down completely exhausted. The pulse is very rapid and the temperature may rise to 102 or 103 degrees, sometimes higher.

In fatal cases the patient may die within a week, no treatment succeeding in quieting the exhausting delirium.

**Treatment** is the same as that of DELIRIUM TREMENS, *which see*.

**DELIRIUM TREMENS** is an acute temporary insanity developing in an habitual drinker. (*See ALCOHOL.*)

Sometimes an acute illness, or an injury or shock, such as an accident causing a broken leg, may usher in an attack of delirium tremens in a hardened drinker. In rare cases the sudden complete withdrawal of alcohol from a confirmed and excessive drinker is followed by delirium tremens. The common symptoms are mental delusions, the patient seeing and hearing imaginary horrors, a constant babbling or shouting, a trembling of the hand and tongue, and inability to sleep. The patient struggles violently with his nurse or attendants, and frequently resists all attempts made to feed him. Occasionally there is marked fever, the pulse is weak, and finally the patient may pass into a state of dangerous exhaustion.

**Treatment.** Every effort must be made to make the patient sleep. He should be kept flat on his bed, if necessary, by straps or long bath towels, tying down his arms and legs to the sides of the bed. Unremitting nursing and care is essential, as if left to himself the patient may commit suicide, or some act of violence to some other person. He must be carefully guarded from chill and exposure, as acute pneumonia of a fatal type is very apt to

develop. His strength must be kept up by giving every two hours small amounts of strong soups, meat broths, and milk.

If the patient cannot be persuaded to take these by mouth, they may be introduced into the stomach through a soft rubber catheter passed along the floor of the nose into the stomach.

Where the patient's raving and restlessness are rapidly wearing him out, the physician must have recourse to strong sedative drugs. Chloral, the bromides, or sulphonal in large doses may be required.

The physician may prescribe the following mixture (Purves Stewart) :

℞	Potassium bromide .. .. .	1 drachm
	Chloral hydrate .. .. .	40 grains
	Tincture of hyoscyamus .. .. .	1 drachm
	Peppermint water .. .. .	2 ounces
	enough to make	

Make into a mixture. Give two tablespoonsful. If this dose fails to quiet patient, give one tablespoonful more in a couple of hours.

Note that this is a large dose, which should never be prescribed except by the physician in attendance.

An attack of delirium tremens usually passes off in two or three days under appropriate treatment. In other cases the insanity may persist for several weeks, or even months. In these latter cases asylum care is usually required.

As a general rule, the patient should be given no alcohol whatsoever. If the heart becomes very weak, the physician may prescribe a hypodermic of strychnia. After an attack of delirium tremens the patient may be greatly run down. If possible, he should have a holiday from all fatiguing and nerve-racking duties until he is quite fit again. The following is a useful tonic mixture which may be taken with advantage for three or four weeks after the attack :

℞	Tincture of nux vomica .. .. .	90 minims
	Dilute phosphoric acid .. .. .	3 drachms
	Spirit of chloroform .. .. .	3 "
	Infusion of calumba .. .. .	8 ounces
	enough to make	

Make into a mixture. Take one tablespoonful in a little water three times a day after meals.

Sometimes a short stay at the seaside has a valuable tonic effect.

**DELTOID MUSCLE.** The muscle which raises the arm from the side. It is attached at one end to the collar-bone and shoulder-blade, and at the other end to the upper arm bone near its middle point.

**DELUSIONS** are very common among the insane. They may be present in every form of mental unsoundness. They arise from inability to correct the imagination by the judgment.

In the case of old people making their wills it is often a matter of great importance to decide whether they are influenced by delusions. A man may believe that he is made of glass and yet make his will with sound judgment,



But if he suffers from delusions with regard to the conduct of his relatives and friends, or as to the amount of his property, his will is likely to be faulty.

In some forms of mental disease the delusions change, and are often contradic-

tory. But in the form of insanity called paranoia they are more or less fixed, and the subject regulates his conduct by them. Usually there are some premonitory symptoms. The person drifting into delusional insanity is often at first very suspicious, touchy, and eccentric. He is vain, and tries to draw attention to himself. He is self-opinionated, unduly fond of praise, and all his deportment shows that he is absorbed in himself.

Although the delusions entertained are of infinite variety, they roughly group themselves into two great classes—delusions of persecution and delusions of exaltation.

To the former class belong that type of mentally diseased person who thinks that the people he passes in the street are talking offensively of him, that people are conspiring to injure him, that someone is trying to poison him. At the same time he has hallucinations, and hears voices saying insulting things, smells foul odours, finds a bad taste from food, has shooting, tingling pains. All these he attributes to the machinations of his enemies. A man in this state is often very dangerous, for he may attack any stranger or friend whom he suspects. He often changes his residence to escape from his enemies, plugs his ears to keep out the "voices," cooks his own food to avoid being poisoned, etc. Everything he does would be quite reasonable if the delusion were true.

In the delusions of exaltation a person has extraordinary ideas of his own greatness. He may believe himself to be a prophet, a king, the greatest orator, poet, military genius, etc., in the world. He may think he possesses vast wealth, owns millions of acres, that he has the strength of a giant. Very often these delusions of exaltation follow delusions of persecution.

The trend of the disease is frequently towards dementia or profound mental feebleness.



THE DELTOID MUSCLE

**DEMENTIA** is a form of mental disease in which the patient's intellect is greatly weakened, and his powers of attention, memory, and judgment are impaired or almost lost.

The condition varies widely in degree. Many very old people gradually fall into a state of slight dementia. The great majority of cases of insanity end in dementia.

Insanity may commence in mania with its wild excitement and loss of control; if the subject lives long enough his brain further degenerates, and he falls into a state of dementia. The demented patient loses all affection for relations or friends, is unable to perform the ordinary duties of life, cannot make any mental effort or keep his attention fixed. He forgets incidents immediately after they occur, and passes his life in a state of stupor. His expression is vacant, he may bolt his food, he sits in a crouching posture, and has a tendency to cover his head with clothing night and day. As a rule he is harmless, but he may attempt to commit suicide.

The causes are mental or moral shock, nervous exhaustion, the brain degeneration of old age, brain tumours, excessive drinking of alcohol, syphilis, and, especially, prior attacks of mania.

**Treatment.** To often no treatment is of any avail. If the patient is young his interest in the world's happenings should be aroused. He should have pleasant, bright companionship. Travel is one of the best restoratives. He should have nourishing, stimulating food and some such bracing tonic as the following to stimulate his appetite and improve his general health:

℞	Solution of ferric chloride	..	..	..	2 drachms
	Quinine sulphate	..	..	..	10 grains
	Dilute hydrochloric acid	..	..	..	1 drachm
	Tincture of nux vomica	..	..	..	1 "
	Magnesium sulphate	..	..	..	3 drachms
	Infusion of quassia	..	enough to make	12	ounces

Make into a mixture. Take two tablespoonsful three times a day after meals.

In cases of alcoholic dementia the following mixture may give good results:

℞	Iron and ammonium citrate	..	..	..	2½ drachms
	Potassium iodide	..	..	..	3 "
	Peppermint water	..	..	enough to make	16 ounces

Make into a mixture. Take two tablespoonsful three times a day after meals.

Old people suffering from even mild dementia require constant careful nursing and attention. If this cannot be obtained at home the patients are much better off in an institution.

**DEMULCENTS.** White of egg, honey, starch, glycerin, gelatin are examples of demulcents used in medicine. Their primary object is to soothe and lessen the irritation of mucous membrane.

# THE GENERAL KITCHEN OF THE HOSPITAL

Here are prepared meals for nearly 1000 patients and staff every day.



# A CORNER OF THE X-RAY ROOM

X-Rays are used both for photographs ("shadow pictures") and for treatment of various skin diseases.



# THE OPERATING THEATRE FOR OPHTHALMIC CASES

Operations on the eyes are carried out with the strictest antiseptic precautions



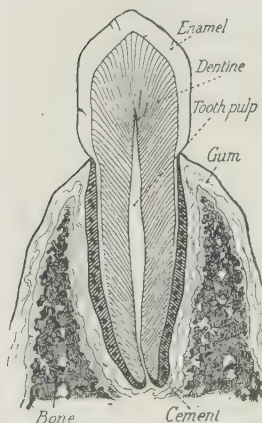
**DENGUE, OR DANDY FEVER**, is an acute fever of tropical countries, the chief characteristics of which are intermittent fever, severe pains in the limbs and bones, and a characteristic rash. The common name "dandy fever" comes from the stilted walk enforced on the patient by the excruciating pain.

The symptoms usually come on within four or five days of the patient's having exposed himself to infection. Then suddenly headache, chills, and excruciating pains in the bones and muscles usher in the attack. The temperature may run up four or five degrees, or even more, above normal. Besides the ordinary symptoms of acute fever, temperature, furred tongue, flushed face, etc., the most noticeable characteristic of dengue is the excruciating pain in the back, head, and limbs. On account of this pain dengue is sometimes mistaken in its early stages for rheumatic fever.

After three or four days of fever the temperature begins to drop suddenly, and for two days, or three, the patient may have no pains; then without warning the fever suddenly returns, and with it come the pains in the head, back, and limbs. Sometimes an eruption may appear on the skin similar to that of nettlerash or measles. After another few days of fever and pain the symptoms gradually pass off, the patient completely recovering within a fortnight of the original onset.

The actual cause of the disease is not known, but it is generally considered to be a micro-organism which gains its entrance to the blood stream of the patient through the bite of a mosquito. Dengue is very infectious, epidemics often spreading like wildfire through crowded tropical populations, but very few deaths have been recorded.

**Treatment.** No drug treatment seems to have any effect in lessening the course of the disease. In severe cases it may be necessary for the physician to give hypodermic injections of morphia to mitigate the excruciating pain.



SECTION OF TOOTH SHOWING  
DENTINE

Dentine, the substance of the tooth, is protected from decay by the thin layer of enamel.

**DENTINE** is the material from which the main bulk or substance of the teeth is made up. On the outside of the dentine, to protect it from the decaying influence of the germs and juices in the mouth, is a thin layer of much harder material called the enamel. (See TEETH.)

**DEODORISERS.** All perfumes, volatile oils, etc., which may be used to mask unpleasant odours come under this heading. Powerful disinfectants such as carbolic acid, which purify the air by destroying putrifying materials giving off evil odours, may be included as well.





ST. GEORGE'S HOSPITAL

- (1) The Princess Ward ; The Operating Theatre ; (3) A corner in the Fitzwilliam Ward ;  
(4) The Clinical Laboratory.

**DEPILATORIES** are preparations used for removing superfluous hair.

The surest and most efficacious way of getting rid of objectionable hairs is by electrolysis (*which see*). The process consists of introducing an electric needle into the tiny pit in which the root of the hair to be removed is embedded. The current is then turned on for a moment, after which the needle is removed, and the hair may be pulled out without pain.

Since the hair-root, or bulb, is destroyed by this process that individual hair cannot grow again. When carried out by a competent operator the treatment is practically painless, and there should be no scarring.

The objections are that electrolysis is expensive, takes a long time to carry out, and only gives the best results in those cases where there is a moderate number of heavy, coarse hairs to be removed. Also, if the treatment is attempted by an unskilled, incompetent operator, it may be very painful, and permanent and noticeable scarring may result.

Where, instead of a few coarse hairs, there is a profuse growth of fine, downy hairs, electrolysis is rarely suitable.

Depilatories containing active caustics as a rule give better results with profuse downy growths. Barium sulphide is the active principle of most of the depilatories on the market. The following is a simple prescription, cheap and readily made up :

R

Barium sulphide	..	..	..	..	..	2 parts
Starch	..	..	..	..	..	4 "
Orris root	..	..	..	..	..	2 "

Make a little into a paste with water and apply to the hairy parts. Leave on for five minutes, or until the skin begins to tingle slightly, then scrape off with a blunt knife and wash the part with cold water. Dry, and apply a little boracic ointment or cold cream to the skin.

This treatment may be repeated from time to time as the hairs grow again. The chief drawback is that it sometimes causes slight irritation of the skin if used too frequently, and may cause a troublesome burn if left on too long.

Like every other caustic depilatory, it may also have the effect of stimulating the growth of the fine downy hairs, tending to make them grow out more stiff and bristly in time.

The same objection applies to shaving the hairs and pulling them out with small forceps. In both cases stronger and darker hairs may appear in the place of those thus removed.

**DEPLETION** means reducing the volume of blood in a particular part, or in the whole body. It may be effected by purgative medicines, leeches, cupping, etc.

**DEPRESSION.** No one escapes altogether from occasional feelings of unaccountable depression.

Women who spend much of their time in the house without agreeable companionship are especially liable to them. The fits come and go from day to day, or they deepen and lighten without any apparent cause.

The cause, indeed, is not always easily discovered. It may be the influence of the weather, the gloomy sky and "depressing" east and north winds. When the barometer is low on days of drizzling rain most people are apt to be more or less depressed. This is accounted for by withdrawal of blood from the brain to the skin surfaces and into the abdomen, owing to the low pressure of the atmosphere surrounding the body. For weather depression there is no cure, but lying down temporarily relieves it to some extent.

Sometimes depression arises from poisoning of the blood by waste products in the body. Eating too much meat, eating hastily, drinking too much tea, and other causes of indigestion are at the bottom of this form of the affection. Catarrh of the stomach, even of very slight degree, will often give rise to deep despondency.

Absence of sunlight not only depresses the spirits but lowers the vitality of the whole body. Other causes known to produce depression are the presence of sewer gas in a house owing to the defective drainage, arsenical colouring matters in wall paper, and an escape of coal gas. A very slight escape of coal gas is sufficient to cause marked depression, even when it occurs in a room beside or below that usually occupied.

Many women fall into the evil practice of taking drugs when this despondent condition troubles them. Nothing could be more senseless. The drugs do not cure the trouble, but only make it much worse. In the end, they wreck the victim's health. There is no escape from this consequence if "drugs" are persistently used.

In all cases of depression constipation should be prevented, fatigue of mind or body avoided, and the food regulated so as to prevent indigestion. As a rule, alcohol is injurious; so is excessive use of tea or coffee. An occasional cup of freshly-made tea is, however, an excellent preventive of mental depression.

Exercise, fresh air in abundance, sunshine, cheerful companionship, and a pleasant, interesting occupation are the best remedies.

Sometimes an iron and strychnine mixture, such as the following, by improving the nervous tone enables the sufferer to enjoy a more cheerful frame of mind.

℞

Solution of ferric chloride	..	..	..	2½ drachms
Solution of strychnine hydrochloride	..	..	..	1 drachm
Syrup	..	..	..	1 ounce
Water	..	..	..	8 ounces
enough to make				

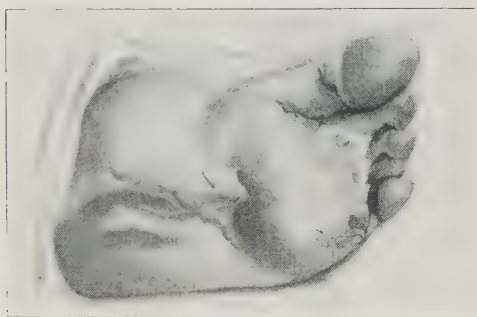
Make into a mixture. Take one tablespoonful three times a day after meals.

A short holiday frequently is the best of all cures. If the mental depression recurs shortly after returning home the victim should examine the gas-pipes and the sewers, and ascertain whether arsenic is present in the wallpaper. If the house is sunless and gloomy the only cure may be to leave it.

**DERBYSHIRE NECK.** Is a local name given to goitre in the Peak district. Its actual cause is not known, but is generally considered to be due to unusual ingredients in the drinking water in these districts. The same condition is found in circumscribed areas in Germany, Switzerland, and India. (*See GOITRE.*)

**DERMATITIS** is a general name denoting any inflammation of the skin. The symptoms are swelling and redness of the skin, together with a feeling of heat and perhaps pain.

Drug eruptions, inflammation resulting from scratching or injury, sunburn, frost-bite, chilblains, ivy poisoning, may all be included under the term dermatitis. (*See under these special headings.*)



ACUTE DERMATITIS OF THE FOOT  
From a drawing at Guy's Hospital.

Two other varieties of dermatitis described are (1) seborrhoeic dermatitis; and (2) herpetiform dermatitis.

**SEBORRHOIC DERMATITIS** always begins on the scalp, though it may later on descend to the trunk as well. The chief characteristic is the formation of dry, yellowish, greasy scales under which the scalp or skin is of a

greyish red colour. There is usually a slight amount of itching.

**Treatment.** Sulphur and resorcin are the remedies of most value. (Schamberg.) For use on the scalp this authority recommends the following lotion:

℞	Resorcin	..	..	..	..	2 drachms
	Castor oil	..	..	..	..	1 drachm
	Rectified spirits of wine	..	..	..	..	6 ounces

Make into a lotion, and apply nightly to the scalp.

NOTE.—Resorcin discolours light hair, and this lotion should be used with caution by fair-haired persons.

Once a week the scalp should be thoroughly shampooed.

For the non-hairy regions Dr. Schamberg recommends the following:

℞	Precipitated sulphur	..	..	..	1 drachm
	Petrolatum	..	..	..	1 ounce

Make into an ointment. Apply once or twice daily.





THE CHARING CROSS HOSPITAL

Minnie Paget Ward (top), Alexandra Ward (inset); Operating Theatre (bottom).

**HERPETIFORM DERMATITIS.** Here the inflammation of the skin is accompanied by the formation of blebs, papules or pustules, redness, and a considerable amount of burning and itching, and perhaps pain.

The disease is commonest in middle-aged and old people, particularly nervous, high-strung women.

**Treatment.** The physician must make every effort to determine the cause of the disease. Frequently some serious shock or nervous upset is at the base of the trouble. Local treatment consists of soothing applications such as weak tar lotions, or ichthyol ointment spread on lint, and applied to the eruptions.

There is no known cure for the disease, which too often after an apparent cure is apparently in sight breaks out again.

**DERMOID CYSTS** are hollow tumours whose walls are composed of tissue closely resembling skin or mucous membrane. They may occur on the face, the neck, the floor of the mouth, in the ovary, and other internal parts.

Their contents may be fluid or semi-solid. Sometimes they contain teeth, masses of hair, fatty matter, nails, and horn.

The only treatment is removal of the cyst by operation. (*See CYSTS, page 537.*)

**DESQUAMATION** is the peeling of the skin or scaling which follows scarlatina, measles, German measles, small-pox, etc.

**DETERGENTS** are substances which cleanse the skin, as water, alcohol, turpentine, soap, borax, sand, etc.



THE CLINICAL LABORATORY AT THE CHARING CROSS HOSPITAL



A WARD IN GUY'S HOSPITAL IN THE 18TH CENTURY  
From an old print.

**DEVONSHIRE COLIC** is a local name for lead poisoning caused by drinking Devonshire cider which has been contaminated with lead.

On account of its contained acids cider, if kept in leaden vessels or passed through leaden pipes, may dissolve off sufficient of the metal to give rise to severe lead colic when the cider is drunk. The symptoms are a blue line on the gums, intense stomach ache, progressive weakness, and widespread inflammation of the nerves. (See **LEAD POISONING**.)

**DIABETES.** Two distinct varieties of this disease, (1) diabetes mellitus: and (2) diabetes insipidus, are described.

**DIABETES MELLITUS** is a disease of nutrition chiefly characterised by rapid wasting and the passing of sugar in the urine.

Other symptoms are constant thirst, increased appetite, and progressive weakness. The amount of urine passed is generally very greatly increased. The water is pale in colour, of a high specific gravity (1.025 to 1.050), and contains sugar varying from 2 to 8 per cent. or more.

The disease appears to be on the increase in civilised countries. Sometimes it seems to single out the members of certain families, though there is no evidence that the disease can be directly inherited. Men are more likely to develop diabetes than women, and it is commonest in middle life. A tendency to fatness in youth, a highly nervous disposition, a too strenuous business life, an undue fondness for the good things of the table, have all been suggested as predisposing causes of diabetes.

The actual cause of the appearance of sugar in the urine and the accompanying wasting has never been definitely settled. According to some observers an over-activity of the cells of the liver which take up the sugars of our food is the cause of the sugar appearing in the blood, from whence it is collected and passed out of the body by the kidneys. In other cases, the nervous system seems to play an important part, for injuries to certain parts of the brain immediately lead to the presence of sugar in the urine. Degenerative disease of the pancreas, or "sweetbread" (the large gland lying behind the stomach



which empties its secretion into the small intestine a little below the lower end of the stomach) also may lead to the appearance of sugar in the urine.

Any or all of the above causes may be at work in any particular case of diabetes.

**Symptoms.** Gradual loss of weight and progressive muscular weakness may be the first symptoms to draw the patient's attention to his state of health. He may also have noted that he drinks more fluids than he used to, and that he constantly has to relieve his bladder.

The amount of urine passed in the twenty-four hours may vary from anything over the average (two to three pints) up to ten or fifteen quarts. The actual weight of sugar passed during the day may vary from a few grains up to pounds. A symptom often noted in advanced cases is a faint violet-like odour, both on the breath and from the urine. Intense itching of various parts of the body, patches of eczema, and continuous crops of boils are not uncommon skin complications.

**Progress of the Disease.** The younger the person, the more sudden the onset, and the larger the amount of sugar in the urine, the more rapid is the downward progress. Complete recovery is rare, at any age, although when the disease develops in a mild form in the forties or fifties the patient, with care and constant attention to the diet, may live to a ripe old age. On the other hand, in young people progress is apt to be distressingly rapid. The weakness and emaciation become more and more pronounced, and death may result in from a few months to a year or two from the onset, either from acute exhaustion or during unconsciousness in the condition known as diabetic coma.

During the course of the disease various complications may arise which may hasten the fatal termination. For example, acute pneumonia or consumption may develop, the general lowered state of the system leaving the tissues particularly open to germ attacks. Nervous symptoms such as neuralgia or inflammation of the nerves controlling the limb muscles may develop. Eye complications include cataract and even sudden, total blindness.

**Diagnosis.** The mere presence of sugar in the urine is not enough to make the diagnosis of diabetes mellitus certain. Sometimes, particularly after a meal largely composed of starches and sugars, a small percentage of sugar may be found in the urine of a healthy person. To justify the diagnosis the sugar must be present week in and week out, even when the patient is on a diet containing only a moderate proportion of starchy foods and no sweet foods.

**Tests for Sugar in the Urine.** One of the commonest is that known as Fehling's test. As this solution is very apt to decompose on being kept it should be obtained fresh from the chemists. The formula is :

R

Copper sulphate	..	..	..	..	..	45 grains
Neutral potassium tartrate	..	..	..	..	..	3 drachms
Solution of caustic soda	..	..	..	..	..	2 ounces
Distilled water	..	..	enough to make	..	..	6 ounces



Fill a narrow glass tube about one quarter full with this mixture, and boil for a moment over a spirit flame. If the mixture is made of pure ingredients the dark blue colour will be retained. Now add an equal amount of the urine suspected of containing sugar, and boil again for a moment. If sugar is present the fluid will at once turn a reddish brown colour.

**Prognosis.** While actual cure is very rare indeed, a fairly hopeful outlook can be offered where the patient is in middle life or older, is of the fat rather than the thin type, and has been previously a heavy eater. In these cases, if the patient is put on a diet containing no sugar or starches whatsoever, the sugar may totally disappear from the urine. Strong hopes of years of practically normal health may be held out if such a patient will consent to restrict himself for the rest of his life to a carefully adjusted diet.

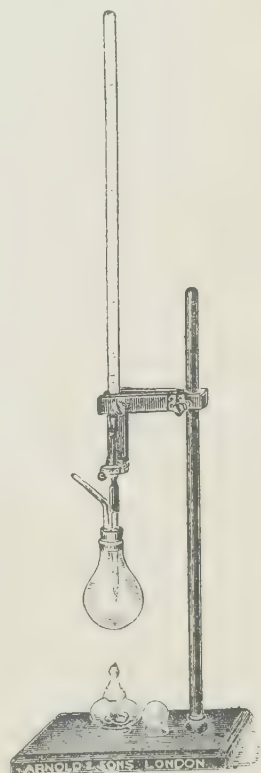
In young people or those in whom the disease has come on suddenly, or where the amount of sugar is large, hospital treatment under the continuous observation of physicians and trained nurses offers the best hope of stemming the advance of the disease.

In early cases and where the symptoms are slight, much can be done by carefully regulating the mode of life and particularly the diet of the sufferer. If possible, he should be guarded as much as possible from the ordinary worries and cares of life, and should reside in a warm, dry, and equable climate. He should take moderate daily outdoor exercise, go to bed early, get plenty of sleep, and avoid all nervous strain. A hot bath with a brisk rub down every morning helps to keep the skin in a high state of efficiency.

An accurate and careful record of the patient's weight should be kept, for if on any particular semi-restricted diet he continues to lose weight this should be taken as a warning that stricter measures are required.

**Diet.** The first step, after the presence of sugar in the urine has been discovered, is to cut out all sugary or sweet articles at once. Then for the next two or three days all starchy foods, one after the other, should be forbidden until the patient is finally on the following classical diet, commonly known as von Noorden's, after its inventor:

*Breakfast.* Six ounces of tea or coffee (without sugar or milk), one or two soft boiled eggs, and four ounces of beef steak or mutton chop or boiled ham.



APPARATUS FOR TESTING  
THE PRESENCE OF SUGAR

*Luncheon.* Six ounces of cold roast beef, and two ounces of celery, fresh cucumbers or fresh tomatoes, dressed with vinegar, olive oil, pepper, and salt. Five teaspoonsful of whisky in a large glass of water, and a small cup of coffee without milk or sugar are also allowed.

*Dinner.* Six ounces of thin meat soup, eight ounces of roast beef, two ounces of green salad with vinegar and olive oil, or two or three tablespoonsful of some well-cooked green vegetable, a few sardines, and whisky and water as before, make up the meal. The patient may also at this meal have a couple of teaspoonsful of butter.

*Supper.*—At 9 p.m. he may have two eggs, raw or cooked, and three-quarters of a pint of water.

This diet of von Noorden's contains about six ounces of albumins and four ounces of fat. As there are no starches or sugars included an immediate falling off of the sugar in the urine at once results. From the effect of three or four days of this very strict dieting the extent of the permanent restriction of diet necessary can be roughly judged.

If no sugar at all is found at the end of four days of strict von Noorden diet, small but gradually increasing amounts of starchy foods, such as a slice or two of crisply toasted white bread may be added.

For his staple diet the diabetic patient, when not on one of the classic dietaries, may take any clear soups, tea, coffee (without milk or sugar), soda water, unsweetened lemon drinks, breads made from almond or other patent anti-diabetic flours, such vegetables as cucumbers, celery, spinach, tomatoes, lettuce, and asparagus, all kinds of fish and shell fish, and all meats (except liver) and poultry. He may have a moderate amount of milk and as much eggs and butter as he likes. All the acid fruits, particularly oranges, currants, and the sour berries are allowed.

Articles which should be entirely forbidden (unless the patient has proved that the inclusion of small amounts of one or two of them in his diet does not increase the percentage of sugar in the urine) are ordinary breads of all kinds, rice, tapioca, potatoes, beets, turnips, vegetable marrow, parsnips, and artichokes. All malted liquors, beer, ale, stout, sweet wines, and sweetened beverages of all kinds should be strictly forbidden.

Thick soups on account of the contained starch, and liver on account of the contained sugar are especially forbidden.

Saccharin tabloids or powder may be used to sweeten tea, coffee, and lemonade, etc., and may also take the place of sugar in cooked dishes. Any chemist can supply this.

Medical treatment is most discouraging even when the physician has his patient constantly under his eye. It should never be attempted in the home. The most useful drug is opium, and in some cases it has a marked effect in reducing the amount of sugar secreted.

The complications arising in the course of the disease require the same treatment as is outlined for them under their own separate headings. For the intolerable itching which sometimes adds to the discomfort of the diabetic patient, sopping the part with a 15 grain to the ounce solution of boracic acid often gives relief.

For the diabetic coma, the common termination of the great majority of cases, practically nothing can be done. As the blood in these cases has been found to be abnormally acid the injection of alkaline solutions into the veins sometimes has given good results. This procedure, of course, can only be carried out by the physician in attendance.

**DIABETES INSIPIDUS.** No sugar is found in the urine in this type of diabetes. The chief symptoms are a constant intense thirst and the passing of excessive amounts of water of low specific gravity. The great majority of cases are in children or young adults.

**Cause.** Some affection of the nerves which regulate the size of the blood-vessels in the kidneys is the commonly accepted cause.

**Symptoms.** From ten to twenty quarts of urine may be voided in twenty-four hours. The patient sometimes complains of sharp pains in the kidney region. Whereas in diabetes mellitus the specific gravity of the water is high (from 1.025 to 1.050), the urine in diabetes insipidus is low, 1.001 to 1.004.

Instead of being a very deadly disease, as is diabetes mellitus, diabetes insipidus rarely has any actual ill-effect on the health. It is never fatal in itself.

**Treatment.** As the disease is very frequently found in conjunction with syphilis, symptoms of this disease should always be looked for. If found, vigorous anti-syphilitic treatment (mercury, the iodides, and "606") should be tried. If no other disease is present no treatment at all is required.

Diabetes insipidus sometimes passes off by itself.

**DIABETIC COMA** a condition of unconsciousness which precedes the fatal termination of the great majority of acute cases of diabetes mellitus.

The patient suddenly becomes very sleepy and gradually loses consciousness, death resulting quietly within a few hours of the onset of the symptoms. In other cases the coma may be ushered in by indigestion symptoms, such as vomiting and nausea, together with severe headache and shortness of breath. Following on these symptoms the patient gradually sinks into unconsciousness, death resulting in from a few hours to several days.

*See above under* DIABETES MELLITUS.

**DIACHYLON OINTMENT** is a mixture of equal parts of melted soft paraffin and lead plaster added to an equal bulk of zinc oleate ointment and mercuric oleate ointment. Taken internally it is a dangerous poison.

This ointment is useful where a sedative astringent action is required.

**DIAGNOSIS.** When, after considering all the symptoms and physical signs to be noted in his patient, the physician makes up his mind what disease or morbid state is present he is said to have made his "diagnosis."

Correct diagnosis is, of course, the essential part of all treatment. Otherwise, if a diagnosis cannot be made, all curative measures must be more or less haphazard.

**DIAPHORESIS** is the medical term for perspiration.

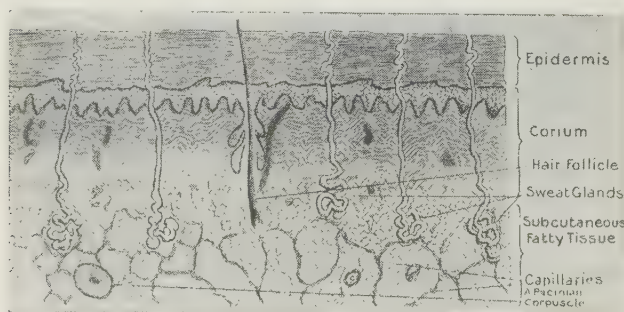
**DIAPHORETICS** are substances used to increase the skin's action and induce perspiration.

In fevers and in many other diseases one of the first signs that the system is upset is a cessation of perspiration. Normally perspiration is constantly taking place, although, as the fluid thrown out of the skin immediately evaporates, we may be quite unconscious of it. By means of this constant emptying of fluid on the skin's surface not only is the body temperature regulated, but the system gets rid of a certain amount of poisonous substances which otherwise would accumulate in the body. When disease sets in, therefore, and the skin becomes dry and loses its normal soft, oily feeling, one of the first duties of the physician is to bring the skin glands back to their normal activity so that these poisons may not be retained in the body.

The diaphoretics he may use in these cases may be (1) natural, or (2) artificial.

**Natural Diaphoretics.** The simplest of all means of inducing perspiration is to wrap the patient in hot blankets, giving him at the same time several glasses of plain water to drink. A very hot bath, followed by half an hour in bed with plenty of bed-clothes, will also usually bring on profuse perspiration. Dry hot air baths or hot vapour baths in which the patient sits in a special cabinet filled with hot air or vapour are very efficient means of inducing perspiration. (*See BATHS, page 195.*)

A hot vapour bath, such as is frequently of the greatest use in inducing perspiration in Bright's disease, is given as follows. The patient's nightgown



DIAGRAMMATIC SECTION OF SKIN, SHOWING SWEAT GLANDS AND SWEAT DUCTS

Small blood-vessels run between the coils of the glands, and from the blood in these the materials that form sweat are extracted.



A PORTION OF HUMAN SKIN MAGNIFIED SHOWING OUTLETS OF SWEAT DUCTS



is removed, and he is lightly wrapped in a thin blanket and placed on his back on a mattress covered with another blanket, the sheet having been removed. Over him, extending from his neck down to below his feet, is placed a wire "cradle," over which another blanket can be draped so as to form a sort of tent about eight inches high, three feet broad, and five feet long over his body and limbs. This covering blanket is tucked tightly around the neck and shoulders, and then the spout of a steam kettle is inserted into an opening left in the roof of the tent above his feet and a continuous flow of steam is allowed to fill the enclosed space.

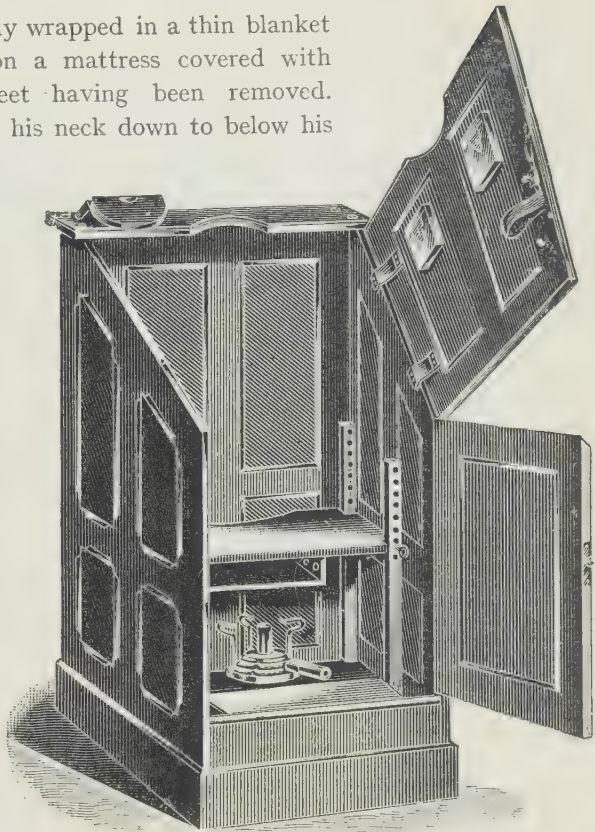
After fifteen or twenty minutes the patient will usually be in a profuse perspiration. The tent

or cradle should then be removed and the patient should be speedily wrapped in dry blankets and returned to his own bed.

As a hot vapour bath of this sort may have a dangerously depressing effect on a weak heart it should never be given except at a physician's order and under his direct supervision.

**Artificial Diaphoretics.** The value of practically all the simple fever mixtures lies in their diaphoretic action. The acetates and citrates form the basis of most of these mixtures. The following is an excellent diaphoretic prescription for slight feverishness where the skin feels dry and harsh and perspiration has been temporarily stopped.

R	Potassium citrate	..	..	..	..	1 drachm
	Solution of ammonium acetate	..	..	..	..	1 ounce
	Syrup of orange	..	..	..	..	2 drachms
	Chloroform water	..	..	..	..	3 ounces
	Water	..	..	enough to make	6	ounces
Make into a mixture. Take one tablespoonful every three hours for four doses						



A BATH CABINET FOR DIAPHORESIS

Opium and ipecacuanha both have a powerful diaphoretic action, hence Dover's powder, a combination of these two drugs, is a much used diaphoretic. At the beginning of a cold where there is slight fever and the skin feels harsh and dry a healthy adult may take five grains of Dover's powder at bedtime, washing it down with a glass of hot lemonade or hot whisky and water.

Within a short time profuse perspiration will set in, and great care should be taken that the patient does not throw off his bed-covers and contract a fresh chill in the night.

**DIAPHRAGM** is a large curved muscle extending almost horizontally across the body dividing the abdomen from the chest. Made up chiefly of muscular fibres, the diaphragm plays an important part in the act of breathing. Dome-shaped rather than flat, with the convexity upwards, its muscle fibres are attached to the sides of the ribs. When these contract the centre of the diaphragm is pulled downwards, thus drawing more air into the lungs.

**DIARRHOEA** in grown people and children. (*Diarrhœa in infancy is dealt with on page 571.*)

Any undue looseness of the bowels from whatever cause may be described as diarrhœa.

**ACUTE DIARRHœA.** The commonest causes are the eating of poisonous substances or unsuitable food, sudden changes in the weather, and chill. A fright or great excitement may cause acute diarrhœa.

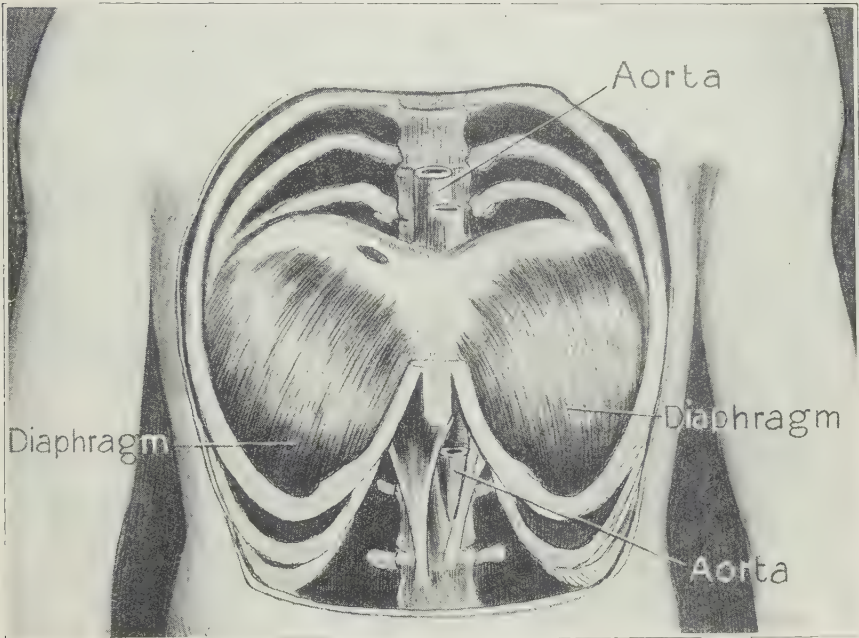
The condition may occur as a symptom in the course of some specific disease such as cholera or typhoid. It is often noted in the advanced stages of cancer, tuberculosis, and other wasting diseases.

**Symptoms.** Watery stools (sometimes containing portions of undigested food), colicky pains, rumblings in the intestines, a coated, furred tongue, great thirst, and more or less weakness and collapse are the chief symptoms of the ordinary acute diarrhœa.

**Treatment.** Where the attack has come on suddenly and there is some suspicion that indigestible or unsuitable food is the cause, a half-ounce, or an ounce, of castor-oil to which 15 drops of tincture of opium have been added may be given at once to an adult patient. He should be put to bed between warm blankets and should have no solid food whatsoever for 48 hours unless the symptoms have subsided.

There should be no effort made to check the diarrhœa in this early stage, until all of the offending food substances, bacteria, etc., have been swept out of the intestine.

On the third day, if the diarrhœa still persists and there are no signs that it is only a symptom in some other disease (such as typhoid), the following dose may be given morning and evening :



THE DIAPHRAGM, THE DOME-SHAPED MUSCULAR PARTITION THAT SEPARATES THE CHEST FROM THE ABDOMEN

The diaphragm plays an important part in filling the lungs in respiration, especially in the male.

℞

Bismuth subcarbonate	..	..	..	..	30 grains
Mucilage of tragacanth	..	..	..	..	1 drachm
Peppermint water	..	..	enough to make	..	1 ounce

Give the whole as one dose morning and evening.

As a local application to the inflamed lining membrane of the lower bowel, the following mixture may be very gently injected into the rectum through a syringe while the patient lies on the left side with the knees drawn up and the buttocks raised a few inches on a pillow:

℞

Powdered starch	..	..	..	..	3 tablespoonsful
Tincture of opium	..	..	..	..	30 drops
Water	..	..	..	..	3 ounces

Mix well and inject very slowly into rectum.

This treatment may be repeated twice in the day if necessary.

After an attack, the patient should pay strict attention to his diet for some days. Milk and soft milky foods should only gradually be replaced in the daily menu by more solid and less digestible articles.

Starchy foods, such as potatoes, thick soups, pastry, etc., as well as red meats and all game are best avoided until the lining membrane of the intestinal tract

has had plenty of time to recover from its recent irritable state. Otherwise a recurrence of the symptoms is very likely.

**CHRONIC DIARRHŒA** may be a late stage of acute diarrhœa or may result from chronic ulceration of the intestinal lining, as in tuberculosis or syphilis. Sometimes ulcers occur through the intestinal lining becoming irritated by hard, impacted masses of fæces, the result of long continued constipation. Chronic recurrent diarrhœa, sometimes alternating with constipation, is a common symptom of cancer of the rectum.

**Treatment.** Before any rational line of treatment can be decided upon, it is essential to find out the exact cause of the chronic diarrhœa.

For example, it is little less than criminal to waste time in filling a patient up with "binding medicines" to stop chronic diarrhœa, when the cause of the trouble is cancerous ulceration of the lower bowel.

The physician should always be called in in these cases, as only by a skilled examination of the motions for traces of blood, disease germs, animal parasites, and semi-digested food, etc., can a correct diagnosis be made. If no cause can be found, the patient should try what a few days' complete rest in bed on a starvation diet of two ounces of boiled milk every two hours throughout the day will do. No other food of any description, and only water as a liquid, should be taken for the week the patient should be in bed. If the patient cannot take the time to lie up, much can be done by careful experimentation with his diet. Begin by cutting out one article after another for a day or two, and note whether the absence of any particular food influences the diarrhœa.

Where the diarrhœa is accompanied by constant rumbling of the intestine and the formation of wind (giving the patient a "blown out" feeling shortly after meals), the following prescription sometimes gives excellent results:

R					
	Bismuth subcarbonate	..	..	..	1½ drachms
	Sodium sulphocarbonate	..	..	..	2 "
	Mucilage of tragacanth	..	..	..	1½ ounces
	Peppermint water	..	..	enough to make	6 ounces

Take one tablespoonful three times a day an hour after meals.

For a simple chronic diarrhœa, with pain and griping in an otherwise healthy, grown person, the following may be tried:

R					
	Tincture of opium	..	..	..	2 drachms
	Tincture of catechu	..	..	..	4 "
	Spirits of camphor	..	..	..	2 "
	Chalk mixture	..	..	enough to make	8 ounces

Make into a mixture, and take one tablespoonful three times a day.

Where the chronic diarrhœa is caused by ulceration of the large intestine, medicines by the mouth are practically useless. Strong astringents injected



into the bowel give much better results. The object here is to stimulate sluggish ulcerated surfaces into a more healthy state so that a cure may take place spontaneously. To accomplish this powerful drugs such as nitrate of silver, sulphate of copper, and salicylic acid are needed ; but their use should never be attempted except by the physician in attendance who can constantly watch the results obtained.

Whatever the cause of the diarrhœa, the diet should be carefully attended to. All highly seasoned and spiced foods, as well as red meats and alcoholic beverages of all kinds should be forbidden. The patient's diet should consist largely of boiled milk or milk-and-soda, together with junkets, custards, and milk puddings.

**DIARRHCEA IN INFANCY** should always be looked upon as a serious complaint, until it is definitely proven to be otherwise. On the one hand, it may be the result of some slight change in baby's food, temporarily upsetting the digestive tract. On the other hand, the symptom may be due to germs finding a breeding-place in the intestine, and there setting up serious and perhaps fatal disease.

Two main types of acute diarrhœa may be described :

1. Cholera Infantum, or "summer complaint."
2. Simple acute diarrhœa.

*For description and treatment of CHOLERA INFANTUM see page 402.*

**SIMPLE ACUTE INFANTILE DIARRHCEA** is commonest in the summer months, and is usually due to impurity or contamination of the baby's milk, or else to the taking of unsuitable food. A chill or a sudden change in the weather may also bring on an attack of acute simple diarrhœa.

The child is fretful and peevish, and has a thin, drawn look about the face. The stools may number from three or four up to eight or ten in the day, are usually greenish in colour, and offensive in odour, and may contain masses of undigested milk curd.

In a mild case of simple acute diarrhœa, careful protection from chill or from overheating, a cutting down of the child's food both in amount and in strength, and a teaspoonful of castor oil to clear out the bowels comprise the treatment. The diarrhœa, as a rule, passes off in a few days, the child quickly regaining its normal condition. In a case of any severity the treatment described under Cholera Infantum (*page, 402*) should be rigorously carried out.

**CHRONIC DIARRHCEA IN INFANCY.** This may follow on an acute attack, or may be the result of the child being continuously fed on unsuitable or impure food. The symptoms are restlessness, a pinched look about the face, a harsh dry skin, loss of weight, and the passing of half a dozen or more liquid stools each day.

**Treatment.** The child should be kept comfortably warm and carefully protected from all chill or exposure. The other extreme, smothering him in too many thicknesses of heavy clothing, must also be avoided. One to two teaspoonsful of castor oil should be given to flush the bowel out thoroughly, and all milk should be withheld for the next few days, its place being taken by albumin water or whey.

If after three or four days on this non-milky diet the diarrhœa does not appreciably lessen the following mixture may be used :

R

Albulactin .. .. .	1 ounce
Cold boiled water .. .. .	6 ounces

Give three tablespoonsful every two hours in place of the usual feeds.

By this treatment the intestine is deprived of all food on which the germs present in it can subsist, the albulactin being absorbed higher up in the stomach and smaller intestines before it reaches the lower diseased part. No milk or other foods of any kind should be given until, the intestinal microbes having been starved out, diarrhœa has practically ceased.

When this stage has been reached, a little peptonised milk, or milk to each ounce of which two grains of citrate of soda has been added, may be gradually added to the diet.

A simple method of peptonising milk is as follows :—Add one drachm of the British Pharmacopœia pancreatic solution and twenty grains of sodium bicarbonate to a pint of milk and a quarter of a pint of water heated to a temperature of 140° F. Keep the mixture at this temperature for half an hour and then bring to the boiling point, remove from fire, and cool.

If, as sometimes happens, the diarrhœa returns as soon as the infant is put back on to its former diet, a non-milky diet (consisting of whey, albumin water, albulactin and water, etc.), must be resorted to for another few days.

In persistent slight diarrhœa in infants the following powder often gives good results :

R

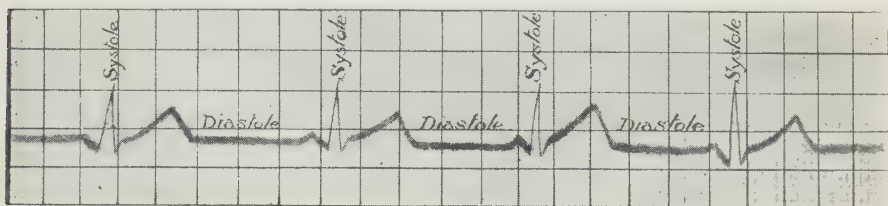
Bicarbonate of soda .. .. .	$\frac{1}{2}$ drachm
Rhubarb powder .. .. .	10 grains
Cinnamon powder .. .. .	8 "
Powdered sugar .. .. .	1 drachm

Mix well and divide into eight equal-sized powders. Give one powder morning and evening.

In rundown and wasted infants where a chronic diarrhœa is pulling down the general health, the physician may be forced to make use of opium in some form. It should be noted, however, that infants stand this drug badly. Diarrhœa mixtures containing opium should never be administered except by the physician.

In this, as in all three other types of diarrhœa in infants, "binding medicines" should be used with the greatest caution, otherwise they are very likely to do much more harm than good.

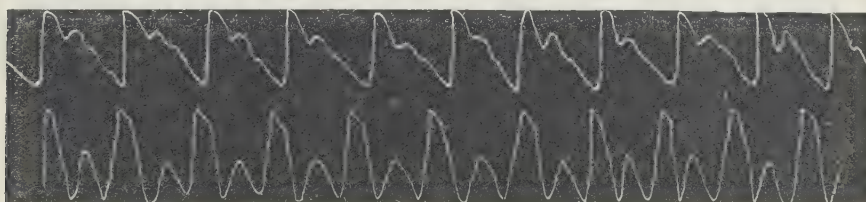
The infant's return to its ordinary milk diet must be slow, and if at any time a return of the diarrhœa threatens all milk should be stopped for a day or two, the infant being fed solely on albumin-water, whey, or the albulactin mixture prescribed above.



ELECTRO-CARDIOGRAM OF NORMAL HEART-BEAT SHOWING DIASTOLE, OR RESTING PERIOD  
From a record from an electro-cardiograph (see page 361) made by Cambridge Scientific Instrument Co.

**DIASTOLE** is the name applied to the resting period of the heart after each expulsion (systole) of blood from the ventricles into the great arteries. During diastole blood is flowing from the auricles into the ventricles.

The first beat is heard during the systole or contraction, the second sound at the beginning of the diastole or relaxation. During every twenty-four hours the heart works about nine and rests about fifteen hours.



SPHYGMOGRAPH TRACINGS OF PULSE BEATS, SHOWING NORMAL AND DICROTIC PULSES  
Normal Pulse above, Dicrotic Pulse below.

**DIATHESIS** means a person's constitutional bias which may render him more or less liable or more or less resistant to various diseases. (See CONSTITUTION.)

**DICROTIC PULSE.** This means a pulse in which a double beat, something like a postman's knock, can be felt at the wrist.

Every pulse is naturally dicrotic, but ordinarily the second tap is so slight that it cannot be felt, although it is registered by a sphygmograph. In the weakness of typhoid and other severe fevers, the double pulse is usually noticeable, indicating prostration. It occurs in cases of low arterial tension or low blood pressure, in which the heart may beat violently while the blood vessels have lost their tone. When, as in some persons, it is habitual, debility is probably the cause, necessitating tonic medicines. (See DEBILITY.)

**DIET.** Both as a means of keeping in health, and as an integral part of the treatment of all diseases, the food we eat is of the utmost importance.

The body, if it is to be kept in health or rebuild its vigour, temporarily lowered by disease, must have suitable food which will repair the breaking down of tissue constantly taking place, and which will supply muscular energy and bodily heat. Foods are generally classified as :

(1) Proteins, such as the meats and cheese.

(2) The starches or carbohydrates, such as sugars and starchy vegetables, cereals, etc.

(3) Fats, such as cream, oils, and butter.

(4) Mineral salts.

In addition, practically every article of food we eat contains more or less water.

Our foodstuffs are all made up of combinations of the above elements. For example, bacon is largely fats and proteins. Milk contains a great proportion of water, a small percentage of proteins (in the form of casein), a certain amount of carbohydrates (the sugar), a varying proportion of fat (the cream), and certain mineral salts in minute quantities. It is because milk contains practically all the food elements in easily digestible proportions that it is the most perfect of all natural foods.

Whether any particular food is to be tissue-builder and waste-repairer or, on the other hand, an energy or heat provider, depends on the proportion of the above-mentioned food elements contained. While the proteins or meaty foods stand practically alone as tissue builders, they combine with this quality to a certain extent that of assisting the carbohydrates or starches and the fats in their work of producing heat and energy.

Any food, whether carbohydrate, fat, or protein, must become oxidised in the body before it can be made use of by the tissues. This oxidation or burning up is the result of the digested food elements in the blood combining with oxygen, which finds its way into the blood through the lungs. Wherever oxidation takes place, heat must be produced or energy must be liberated. The more thorough the oxidation, the greater amount of heat thrown off. It is because fats are so thoroughly oxidised in the system (and therefore produce the maximum of heat in the process), that they head the list of the warmth-producing foods. The carbohydrates or starches require not quite so much oxidation but still a fair amount, hence they, too, are important heat producers. The proteins, although not to be compared with the fats as heat producers, nevertheless are of value in this respect as they, too, require thorough oxidation before they can be used by the tissues.

The heat-producing value of a number of common foods in terms of "calories" is given below. A calorie is the unit chosen as the standard of heat production. The term denotes that amount of heat which is needed

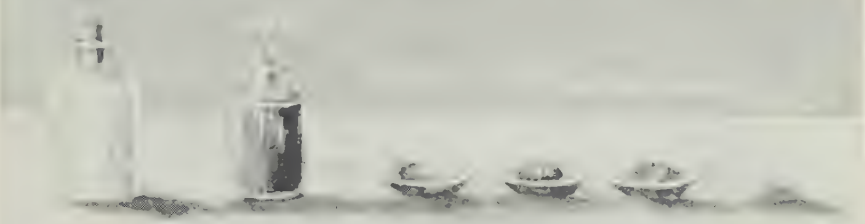


WHITE BREAD



BREAD CONTAINS: Water, 35.8; Protein, 9.2; Fat, 1.8; Carbohydrates, 58.1; Minerals, 1.1 per cent.

MILK



MILK CONTAINS: Water, 87; Protein, 3.3; Fat, 4; Carbohydrates, 5; Minerals, 0.7 per cent.

CHEESE



CHEESE CONTAINS: Water, 34.2; Protein, 25.9; Fat, 33.7; Carbohydrates, 2.4; Minerals, 3.8 per cent.

BEEF



BEEF CONTAINS: Water, 52.5; Protein, 16.1; Fat, 17.5; Carbohydrates, none; Minerals, 0.9; Miscellaneous (of no food value), 13.3 per cent.

to raise the temperature of one kilogramme of water one degree centigrade.

Food				Number of Calories per pound (Hutchison)
Butter	..	..	..	3577
Cheese	..	..	..	1303
Bread	..	..	..	1128
Eggs	..	..	..	739
Beef	..	..	..	623
Potatoes	..	..	..	369
Milk	..	..	..	322
Fish (cod)	..	..	..	238

In addition to the different food elements in any particular article of diet, the proportion of digestible and indigestible parts must be taken into consideration in judging its actual food value. Thus, although butter will produce more than twice the number of heat calories of any other food, one should not attempt to satisfy the body's needs with butter alone, because the digestion would rebel after a certain point and, the butter passing unchanged through the intestine, the body's demand for heat-forming food would not be satisfied.

The chief argument of the supporters of the use of white bread instead of wholemeal breads is that although the latter contain more nutriment a larger proportion of them pass through the system unabsorbed.

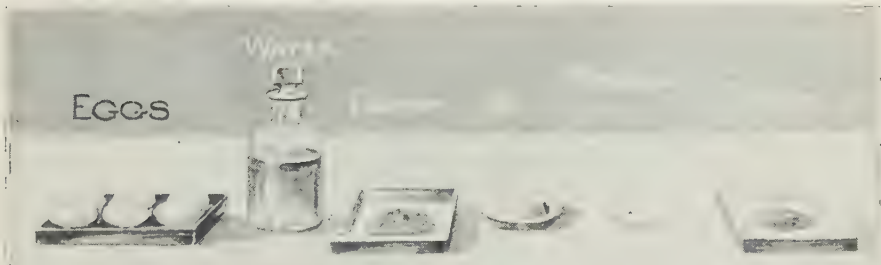
The following little table gives the protein percentage of a few common foods from which their worth as tissue builders can be roughly estimated. Any calculation as to their practical worth as tissue-repairers must be very guarded, however, since protein foods vary greatly in their digestibility. Thus, a fairly digestible food of a relatively lower protein percentage may in practice be worth more as a tissue builder and repairer than a less digestible food containing a larger percentage of proteins.

Food		Percentage of Protein	Food		Percentage of Protein
Cheese	..	33	Oatmeal	..	12
Dried peas	..	22	Pork	..	10
Poultry	..	20	White bread	..	8
Lean beef	..	20	Milk	..	4
White fish	..	18	Potatoes	..	1½

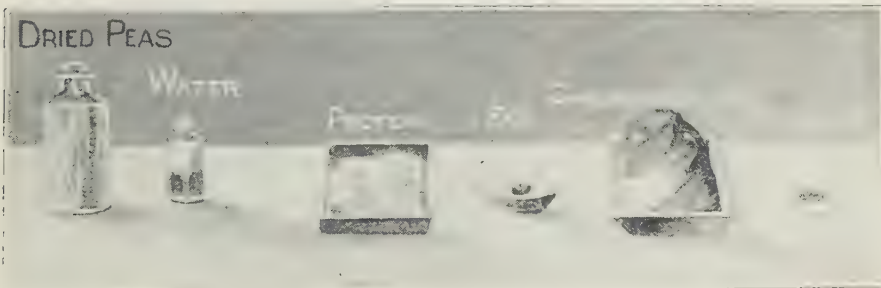
Here, again, it must be remembered that not all the protein present in the food is absorbed. For example, twenty per cent. of the protein in bread is probably not absorbed, while only some two per cent of the protein in beef steak is wasted.



BUTTER CONTAINS: Water, 11; Protein, 1; Fat, 85; Mineral matters, 3 per cent.



EGGS CONTAIN: Water, 65.5; Protein, 13.1; Fat, 9.3; Minerals, 0.9; Miscellaneous (of no food value), 11.2 per cent.



DRIED PEAS CONTAIN: Water, 9.5; Protein, 24.6; Fat, 1; Carbohydrates, 62; Minerals, 2.9 per cent.

DIAGRAMMATIC REPRESENTATION OF PERCENTAGE CONSTITUENTS OF VARIOUS FOODS

In the following table some of the commoner foods are arranged in the order of their digestibility:

- |                            |                |                 |
|----------------------------|----------------|-----------------|
| 1. Oysters.                | 6. Mutton.     | 11. Game.       |
| 2. Sweetbreads.            | 7. Beef.       | 12. Roast Pork. |
| 3. Raw or soft-boiled egg. | 8. Roast fowl. | 13. Lobsters.   |
| 4. Boiled white fish.      | 9. Tripe.      | 14. Salmon.     |
| 5. Boiled chicken.         | 10. Veal.      |                 |

**Amount of Food Required.** Where the food has to build up new tissues, as in rapidly-growing children, or to replace much wear and tear, as in athletes or workers engaged in constantly exercising their muscles, the amount of food required is naturally considerably greater than where there is little active use of the muscles, and bodily development has ceased.

Authorities differ widely as to the actual amount of food the ordinary healthy adult, leading a more or less sedentary life, and doing little strenuous muscular exercise, requires in the twenty-four hours.

For years it has been considered that the ordinary man of average height and weight, doing a moderate amount of muscular work, requires from forty-two to forty-six ounces of food in the twenty-four hours. This is assuming that half of the weight is supplied by the water found in practically all foods. Leaving the water out of consideration, the following table gives the proportions of the different food ingredients :

Albuminous or protein foods	..	..	Nine to ten ounces.
Fats	..	..	Six ounces.
Carbohydrates or starches	..	..	Twenty-eight ounces.

These proportions are, of course, only general, and should be taken simply as a vague guidance for the drawing up of a correct menu. As no one class of food, however, can supply the required food elements in anything like these proportions, the necessity for a mixed diet (except in extraordinary cases) is apparent.

Recently this portioning out of the quantities of the various food elements required has been attacked by many observers, who now hold that only a third or a half as much protein foods is required to keep the body in health. It is claimed that kidney disease, cirrhosis of the liver and arterio-sclerosis (*see page 135*) are largely due to the unnecessary excess of meat we eat.

**Mineral Salts.** Although forming only a minute fraction of the bulk of our foods, mineral salts are essential if the body is to keep in health. Iron, for example, is required for the blood, and the calcium salts and phosphates for the making of bone and repairing worn-out nerve tissues.

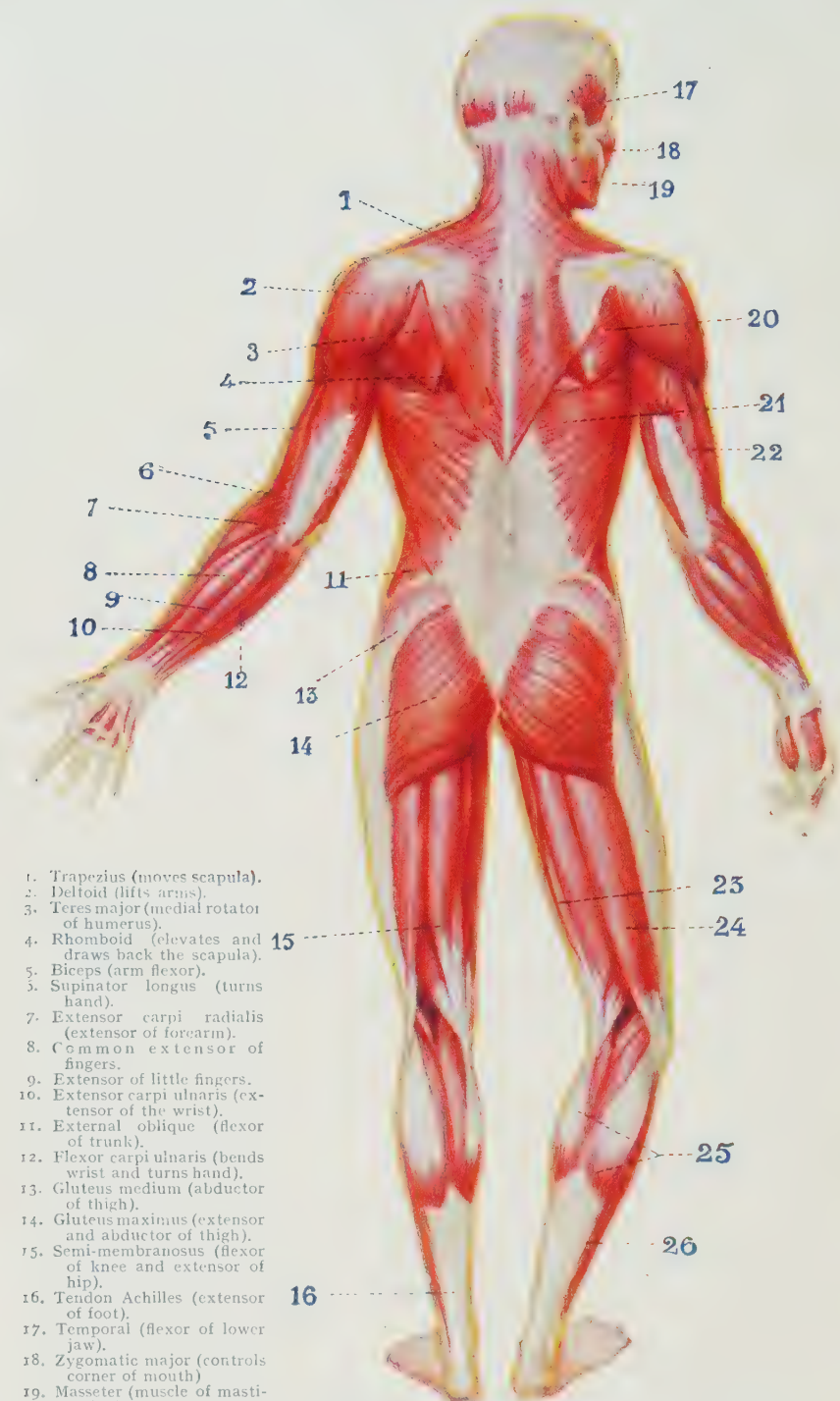
Babies and growing children especially need plenty of natural mineral salts in the food. Iron is found chiefly in meat and eggs, lime salts and potassium salts are obtained in green vegetables, while phosphates are found in meats, brains, and in most cereals. It is because "standard" and wholemeal breads contain the germ of the wheat (which is rich in phosphates) that these varieties of bread are such valuable foods for growing children.

**Climate and Food.** The warmer the climate the less the need for fats, the chief heat-producing foods. The Eskimo depends largely on the oily blubber to keep up his body heat; in very hot countries fruits and non-starchy vegetables make up most of the natives' dietary, to the exclusion of the fats and starches.

People in temperate climates quite unconsciously follow this rule of Nature in choosing their foods. For example, the man who will relish a rich and fatty beef-steak and suet pudding for his lunch on a cold, winter day, will order an infinitely less warming slice of cold, lean roast beef and a little salad when the thermometer is soaring towards the eighties in midsummer.







1. Trapezius (moves scapula).
2. Deltoid (lifts arm).
3. Teres major (medial rotator of humerus).
4. Rhomboid (elevates and draws back the scapula).
5. Biceps (arm flexor).
6. Supinator longus (turns hand).
7. Extensor carpi radialis (extensor of forearm).
8. Common extensor of fingers.
9. Extensor of little fingers.
10. Extensor carpi ulnaris (extensor of the wrist).
11. External oblique (flexor of trunk).
12. Flexor carpi ulnaris (bends wrist and turns hand).
13. Gluteus medius (abductor of thigh).
14. Gluteus maximus (extensor and abductor of thigh).
15. Semi-membranosus (flexor of knee and extensor of hip).
16. Tendon Achilles (extensor of foot).
17. Temporal (flexor of lower jaw).
18. Zygomatic major (controls corner of mouth).
19. Masseter (muscle of mastication).
20. Infraspinatus (assists deltoid [2]).
21. Latissimus dorsi (rotator of humerus).
22. Triceps (forearm extensor).

23. Semi tendinosus (flexor of knee, extensor of hip).
24. Biceps cruris (flexor of leg).
25. Gastrocnemius (flexor of knee, extensor of ankle).
26. Soleus (extensor of ankle).

## HUMAN MUSCLES : BACK OF THE BODY

**DIET FOR INFANTS.** See INFANT FEEDING.

**DIET FOR CHILDREN.** Because they are growing rapidly, children require plenty of protein foods for tissue manufacture. They are constantly on the move, hence they need an abundance of energy-producing carbohydrates and fats. Like old people, they suffer more from cold than do healthy adults, hence they need plenty of fatty foods and starches for production of body heat.

The two cardinal rules in selecting the diet of a child are :

1. All four of the chief food elements, proteins, carbohydrates, fats, and mineral salts must be included at each meal ;
2. The foods must be quickly digestible (*see table above*), and the meals must be at regular hours.

The most suitable protein foods for children up to five years of age are white fish, chicken, meat soups, milk, and eggs. Older children may have beef, mutton and other red meats. The only objection to butcher's meat being given to very young children is that it remains in the stomach longer than chicken and white fish.

Bread, and other cereal foods and potatoes will supply the necessary starchy elements. Dry toast, rusks, and twice-baked bread are all much better than plain bread, being more easily digested, and having, in addition, the valuable effect of training the child to chew its food thoroughly.

New hot bread or rolls should never be given to children. Porridge made from oatmeal or other cereals is readily digestible by young children, if thoroughly cooked. When taken with sugar and cream, porridge supplies in one dish the starches, sugars, and fats which are essential in the growing child's dietary. Other fatty, warmth-producing foods suitable for children are dripping, butter, and fat bacon.

Concentrated sugary foods, such as jams and sweets, should not be given except in small quantities to children, as they are apt to upset the stomach through excessive fermentation. They also lead to tooth decay. The sugar needs of the body must be met, however, by providing plenty of sweet puddings, custards, etc., and by sugaring the porridge, which should be an essential part of every morning meal.

Ice-cream is a most healthful fatty-sugary dish for children, and is readily digestible if made from pure materials and moderate amounts are given. Fresh or stewed fruits should be eaten twice a day. With the exception of pears, which are rather indigestible, practically all fruits and berries (except strawberries) are allowed.

Among the foods which should be withheld from children are those which remain a long time in the stomach during digestion, such as roast goose, pork, salmon, and salted meats, all re-made dishes, and most fried foods. Rich pastry, tea and coffee, and, of course, alcoholic beverages of every kind, should never be given to children.

**DIET FOR THE MIDDLE AGED.** From forty years onward man requires less food, as his bodily vigour decreases. Because he rarely undertakes any violent tissue-destroying muscular exercise now, he requires less tissue building, meaty foods than when he was in his vigorous prime. No special diet is indicated at this stage, but the middle-aged man should remember that his digestive organs are not as young and vigorous as they once were, so he will do well not to throw any unnecessary strain on them. A gradual decrease in his total daily amount of food, as the years pass, and strict moderation in all alcoholic beverages, will do more than any amount of drugs and special treatments to ward off premature old age.

**Diet for the Aged.** *See under heading AGE, page 45.*

**DIET IN DISEASE.** The diet required both in the course of the various diseases and during convalescence is given under the heading of each disease.

**DIET IN PREGNANCY.** Generally speaking, the pregnant woman may be allowed to eat whatever she likes, always provided that her choice of foods does not induce to flatulency or constipation. Where the kidneys are in the least involved, as shown by the presence of albumin in the urine (*see TESTS FOR ALBUMIN, page 52*), a modified diet which will throw the least possible strain on the kidneys should be strictly followed (*see diet in BRIGHT'S DISEASE, page 303*).

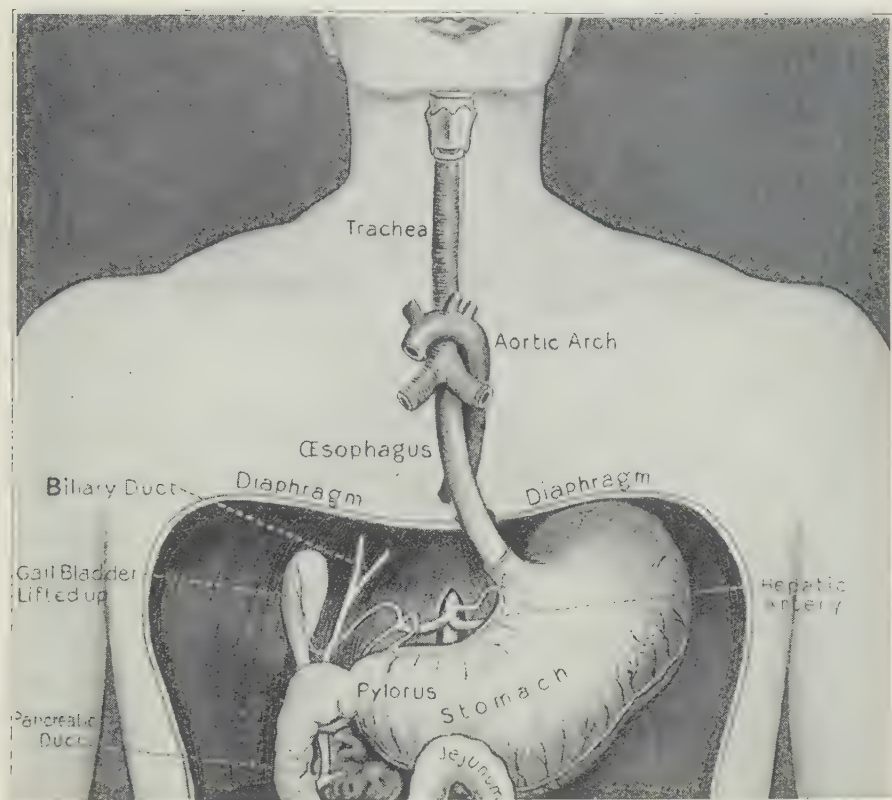
Sometimes during pregnancy an abnormal appetite is developed, with a temporary liking for all kinds of unusual foods. There is no reason why these food-fads should be discouraged, as long as they cause no symptoms of indigestion.

Of late years experiments have been carried out which strongly suggest that the size of the unborn child can be to a certain extent modified by the diet of the mother during the pregnancy. An abundance of starchy foods and fluids is considered to increase the likelihood of the child being large at birth, while a very dry, non-starchy diet for the mother during the last few months of pregnancy is said to result in a small child. In cases where the mother is under-sized, or has an abnormally narrow pelvis, dieting along the lines to ensure a small child (so as to render labour less difficult) may sometimes be carried out to advantage under the attending physician's supervision.

As this reduced diet must perforce be of a highly concentrated nature and largely protein in character, it throws a larger strain on the kidneys than does the ordinary diet. Hence it should never be undertaken without the sanction of the attending physician, who has previously satisfied himself that the patient's kidneys are perfectly sound.

**DIGESTION** is the term used to describe the process undergone by the food we eat up to its actual absorption by the tiny glands in the wall of the intestine.





DIAGRAMMATIC REPRESENTATION OF FIRST STAGES IN DIGESTION

The first step in digestion is the thorough chewing of the food and its intimate mixture with the saliva in the mouth. The saliva is formed in the salivary glands in the cheeks, and is poured into the mouth through the salivary ducts. The saliva contains a digestive ferment called ptyalin. The duty of this ferment is to assist in changing the starchy foods which are indigestible into highly digestible sugars. The thorough chewing of each mouthful plays a very important part in the act of digestion, for in the process, not only is the food ground up into small fragments so that the stomach juices can attack each separate particle at once, but also each mouthful is well-mixed with the salivary juices.

The juices of the mouth are alkaline in reaction, and by the time a mouthful of food is swallowed it should be thoroughly mixed with the alkaline salivary digestive juices. As we have seen above, if this mouthful be of a starchy consistency, digestion of these starches begins at once. If the mouthful be meat, digestion does not begin in the mouth, because foods of this sort (proteins) are unaffected by the alkaline salivary ferments, and require different digestive juices in acid instead of alkaline solution. These they find in the stomach. When the thoroughly chewed mouthful, well-mixed with the alkaline saliva, reaches the stomach,



X-RAY PHOTOGRAPH SHOWING DIGESTIVE ORGANS: BACK OF STOMACH

Photo-radiograph by Sanitas Electrical Co., Ltd.

it is immediately plunged into the gastric juices which are waiting to carry out their part of the process of digestion. These juices are of acid reaction (largely due to the presence of free hydrochloric acid), and contain the main meat digesting ferment called pepsin. A secondary ferment, called rennin, whose duty it is to digest milk, is present in the gastric juices.

For a few moments after a mouthful of mixed food (for example, bread and meat) reaches the stomach the digestion of the starchy element (the bread) continues. Then, as the acid stomach juices get the better of the alkaline



X-RAY PHOTOGRAPH SHOWING STOMACH AND DIGESTIVE ORGANS: FRONT OF STOMACH

Photo-radiograph by Sanitas Electrical Co., Ltd.

mouth juices, the starch digestion (which can only go on in an alkaline medium) is suspended temporarily, and the digestion of the meat begins. The pepsin, which is aided in its work by the hydrochloric acid, now dissolves the hard fibres of the meat into a liquid, soupy consistency called chyme. The stomach aids the mixing of the digesting food with the stomach juices (so that the gastric juice may come into close contact with every particle of it) by carrying out a series of slow, rhythmic, waving movements of its walls, which have the effect of constantly churning up its contents.

During this whole process the lower end of the stomach has been closed by the contraction of a ring of muscle fibres within its walls, so that none of the stomach contents can pass on to the adjoining intestine. When, however, the acid stomach juices have completed their part of digestion this ring opens, and the thick, soup-like chyme passes from the stomach into the first part of the adjoining intestine, known as the duodenum.

The time the food remains in the stomach depends entirely on its nature. A very light meal of toast, omelette, and a glass of milk would pass through the stomach in from one to two hours. Heavy meats, on the other hand—beef, mutton, pork, etc.—may be delayed from four to five hours in the stomach before the necessary pepsin digestion can be completed.

When the semi-digested chyme reaches the intestine, it comes into contact with a large number of different juices and ferments, all of which have their particular duties. Early in this stage of intestinal digestion the acid nature of the chyme is lost, the intestinal juices being alkaline in reaction. At the very start of its passage through the intestine the chyme comes in contact with the bile. This is secreted by the liver and poured into the bowel a few inches below its junction with the stomach. One of the functions of the bile is to assist in the digestion of the fats which have been unaffected by the digestive processes carried out in the mouth and stomach.

At this same point the food becomes mixed with the juices of the pancreas, a large organ lying across the back of the abdomen, behind the lower border of the stomach. A tiny tube or duct collects the secretions of this gland, and, uniting with the bile duct from the liver, pours these pancreatic digestive juices into the small intestine a few inches below the point where the intestine joins the lower end of the stomach.

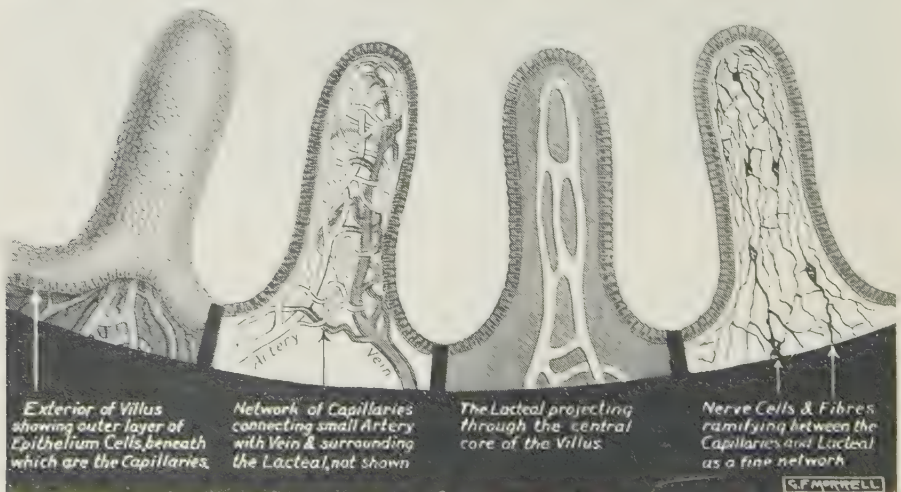


DIAGRAM OF VILLI IN INTESTINAL WALLS, BY MEANS OF WHICH ABSORPTION OF DIGESTED FOOD IN PART TAKES PLACE



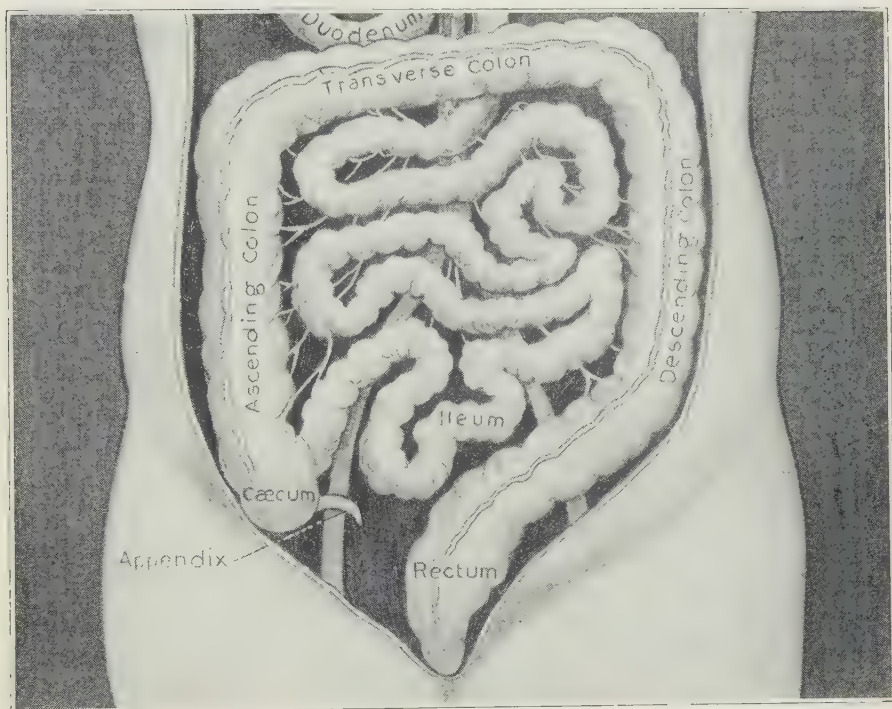


DIAGRAM SHOWING THE LATER STAGES OF DIGESTION

A diagram of the organs concerned in the earlier stages of digestion is given on page 581. See also a diagram of the Alimentary Canal on page 63.

The duties of these pancreatic digestive juices are to turn the fats into oils which can be absorbed by the glands of the intestinal walls, to complete the digestion of milk (which has been begun by the rennin of the stomach), and finally to take up again and finish the transformation of starchy food (bread, potatoes, etc.) which, as we have seen, was begun by the alkaline salivary juices of the mouth, but was interrupted during the acid digestion in the stomach.

Besides the bile and the pancreatic juices, there are other less important juices poured out into the bowel which assist in finishing off the digestion of our food.

The hoards of micro-organisms and bacteria which flourish in the intestines of everyone, healthy and unhealthy alike, also play an important role in digestion.

Their action on the foodstuffs, breaking them down into their component parts, allows the digestive juices to carry out their work better.

Only after the food has been undergoing the above processes of digestion for several hours do the body tissues begin to derive any benefit from the

meal. First the digested food must be taken up by the various glands, lymphatics, and blood-vessels in the intestinal walls, and then, after absorption, the food must be carried to the various parts of the body required by it. The portions of our food which we fail to digest, and which, therefore, cannot be absorbed and made use of by the tissues, are carried on into the large lower bowel, until they are expelled from the system.

Whether the food is absorbed directly from the bowel into the tiny blood-vessels of its walls (as is the case with sugars and certain meaty substances), or whether, as in the case of fats, it is taken up by special glands in the lining membrane of the intestine, the result in the end is the same. It finally finds its way into the blood-stream, in which it is carried to every part of the body.

**DIGITALIS**, or Foxglove, is one of the most powerful and useful drugs we have for the treatment of heart disease. Its chief action is to slow the beat of the heart and to render each contraction more forcible. It also has a direct action on the tiny circular muscles which are found in the walls of the small arteries. By causing these muscles to contract the calibre of these tiny arteries or capillaries throughout the body is made smaller, so that the blood pressure is increased. Digitalis, therefore, is often used where the blood pressure is below normal.

Digitalis and its active principal digitalin, for the simple reason that they have such powerful influence for good when correctly administered, are extremely dangerous drugs to experiment with. A digitalis prescription which may give wonderful results with one individual with heart or kidney troubles may only aggravate the symptoms of another patient.

Another reason why digitalis should never be taken except under a physician's direct supervision is that it sometimes accumulates in the body and then, without warning, when enough of the drug has been absorbed by the system, very serious symptoms of poisoning may develop.

**Overdose.** The first symptoms of overdose are palpitation and unevenness of the heart beat. In severe cases the patient becomes livid, the lips and nails get bluish, shortness of breath, sometimes very pronounced, sets in, and the patient gradually loses consciousness. A fatal termination may result at any moment from the heart suddenly stopping beating.

Frequently the first warning that the patient has been taking digitalis for too long a period or in too large doses is a sudden change in the beat of the pulse. Whereas formerly the drug had had the effect of slowing the pulse, now it may be noted that the rate of heart beat has suddenly become greatly accelerated.

Under these circumstances the patient should be put to bed at once, the greatest care being taken to avoid all exertion on his part in the process. The use of the drug should be immediately discontinued and the doctor in charge

should be sent for at once, as it may be necessary to give hypodermic injections of strychnine, etc., to tide the heart over the crisis.

**Doseage.** Digitalis, when prescribed for its action on the heart, is usually prescribed in the form of the tincture, five to fifteen minims at a dose. Where there is dropsy as well and it is desired to make use of the drug's action on the kidneys, it is usually given as the infusion, two to four drachms at a dose, or the powdered leaves, dose  $\frac{1}{2}$  to 2 grains.

The dose of digitalin, the most useful of the active principles of digitalis, is from one two-hundredth to one-hundredth of a grain, injected under the skin.

**DILATATION** is a condition in which the walls of a hollow organ are stretched and the cavity enlarged, as in dilatation of the stomach, of the heart, of an artery, etc.

**DILL WATER** is a useful carminative for infants and children. It is also used to disguise the taste of salty mixtures.

The dose of dill water, which is prepared from the dried fruit of a European plant, is one to two fluid ounces.

**DILUENT** is the name applied to a liquid used to increase the quantity of urine or perspiration. Common diluents are barley water, plain water, and solutions of alkaline salts.

**DINNER PILLS** are sometimes very serviceable when the digestion is weak and the bowels sluggish. Some people can take them with advantage every day for years. In other cases they become ineffective when their use is prolonged.

Sir T. Lauder Brunton says that "instead of giving the intestines one great push once a day by the dinner pill one may give them a series of gentle jogs by adding to each meal a minute quantity of a purgative; and I find that one-tenth of a grain of aloin, given with each meal, sometimes succeeds when other measures fail."



THE FOXGLOVE—DIGITALIS  
PURPUREA

From "An Account of the Foxglove"  
(1785) by Dr. Withering, the discoverer  
of its medicinal uses.

The following are good recipes for the ordinary dinner pill :

R

Capsicum in fine powder .. .. .	1 part
Extract of chamomile .. .. .	4 parts
Extract of gentian .. .. .	8 „
Extract of Socotrine aloes.. .. .	4 „

Dose : 4 to 8 grains.

R

Myrrh in powder .. .. .	1 drachm
Rhubarb root in powder .. .. .	2 drachms
Extract of Barbados aloes .. .. .	40 grains
Extract of chamomile .. .. .	2 drachms
Oil of cinnamon .. .. .	4 minims

Dose : 4 to 8 grains.

R

Ginger in powder .. .. .	1 drachm
Hard soap in powder .. .. .	1 „
Socotrine aloes in powder .. .. .	1½ drachms
Mercury pill .. .. .	1 drachm
Oil of cassia .. .. .	4½ minims
Oil of peppermint .. .. .	4½ „

Dose : 2 to 4 grains.

For another useful dinner pill prescription, *see under* ALOIN.

**DIPHTHERIA** is a highly infectious constitutional disease, the most striking local symptom of which is the formation of a yellowish whitish membrane on the back of the throat and on the tonsils.

True diphtheria is always caused by a germ called, after its discoverers, the Klebs-Loeffler bacillus. The severe general illness which accompanies the throat symptoms is caused by the poisons formed by these germs being absorbed into the system.

Rapidly spreading epidemics of the disease may break out at any time during the year, but are commonest in the autumn. Single cases apparently unconnected with any epidemic may occur as well.

There is no children's disease which is more highly contagious than diphtheria, the germs usually being spread by direct contact—that is, from person to person.

In nursing a child with diphtheria the greatest care must always be taken that the patient does not cough in one's face, as by this way the germs may find their way into the nurse's throat or mouth, setting up the disease. The clothes of a person who has recently had diphtheria may also spread the disease, the germs living for months in the garments.

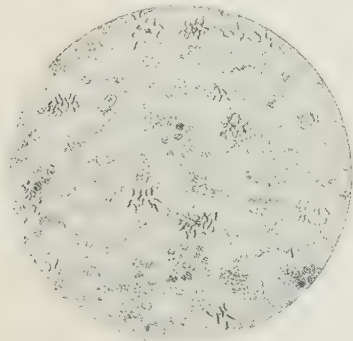
Sometimes even months after apparently perfect recovery a child who has had diphtheria may still harbour living bacilli in his throat. School epidemics have been traced to such "diphtheria carriers" sucking the ends of their pencils which have then passed into the hands of other children.

The germs will live for a long time in milk. Several widespread epidemics have in fact been traced back to milk which has been handled by a milker suffering from a mild attack or convalescent from the disease.



Generally speaking, the younger the child the more likely is diphtheria to terminate fatally. About half the cases occur between the second and sixth year, but older children and even grown people are likely to develop the disease if brought into close contact with a sufferer.

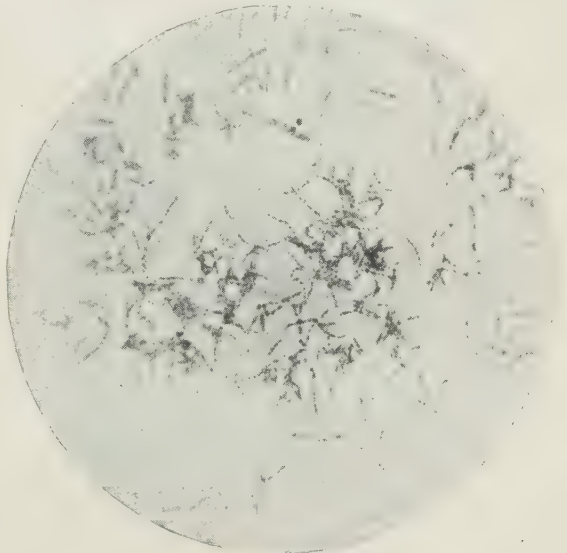
**Onset.** The first symptoms usually show themselves on the second or third day after the child has been exposed to infection. At first he may complain of general "achiness," and perhaps a chill. There may be two or three degrees of fever. The next day he may complain of sore throat, and on examination the whole back of the throat appears swollen, red and angry-looking. Within a few hours a greyish or whitish-yellow patch may be noted on one or both of the tonsils, or the back of the throat. This rapidly grows, spreading all over the back of the throat and the soft palate.



BACILLI OF DIPHTHERIA IN THROAT  
MEMBRANE

In a mild case there may be no difficulty in breathing, and beyond certain pain on swallowing and a slight temperature ( $102^{\circ}$  or so) the patient may not feel ill at all. In these cases the patch of membrane in three or four days gradually disappears, the redness and swelling of the tonsils at the back of the throat abates, and within a fortnight the patient is practically well again.

Generally speaking the severity of the disease can be roughly gauged by the throat conditions. Where the membrane or exudate covers the tonsils, the back of the throat and the soft palate, or extends downwards along the windpipe, the general symptoms become very grave. The temperature here, after having run up to  $103^{\circ}$  or  $104^{\circ}$  in the first day or two, may fall to below normal. The patient becomes deathly pale, the skin cold, and the pulse very rapid. There may be great difficulty in breathing through the membrane blocking up the entrance to the windpipe. Death may result suddenly from



THE BACILLI OF DIPHTHERIA

choking or from acute exhaustion due to the action of the germ poisons absorbed.

It should be remembered, however, that it is by no means rare for the child to be very dangerously ill when there has been only a small amount of membrane on the throat. Every case of diphtheria, therefore, should be recognised as a most serious disease demanding the instant attention of a physician.

**Diagnosis.** Because of its highly infectious nature, its high mortality rate, and the necessity of beginning treatment with the least possible delay, an immediate diagnosis is all-important. In many cases it is impossible for even the skilled physician to diagnose diphtheria at first sight. Before he can be absolutely certain he must take "cultures" from the patient's throat and from these determine in the bacteriological laboratory exactly what germs are present.

As even the delay necessary in this procedure is often enough to give the patient time to spread the disease on to his playmates or schoolfellows, it should be a fixed rule that any sudden sore throat, with redness and swelling of the tonsils, in a child of from two to seven, should be the signal for its immediately being isolated from all other children. If within forty-eight hours there is no sign of a membrane forming, there is every possibility that the ailment is not diphtheria. If, on the other hand, it is diphtheria, the prompt quarantine measures taken may have prevented the spread of the disease to the other children in the house or school.

**Treatment.** Diphtheria used to be one of the most fatal of the ailments of childhood.

Before the introduction of the anti-diphtheritic serum in the treatment of diphtheria (about 1894) the death-rate ranged from 20 to 40 per cent. in ordinary hospital practice, although the patient had the benefit of continuous medical care and skilled nursing. The following table, taken from the reports of the London Metropolitan Asylums Board Hospitals, shows how the use of the anti-toxic serum treatment since 1894 has affected the death-rate.

Five Year Periods	Admissions	Deaths	Ratio of deaths to admissions
1894-1898 .. ..	24,048	4,781	20 per cent.
1899-1903 .. ..	35,763	4,262	12 "
1904-1908 .. ..	25,027	2,312	9 "

So fully proven is the great assistance afforded in fighting the disease by the early use of the anti-toxin, that the English Local Health Authorities now always keep on hand a free supply for the use of the poor.

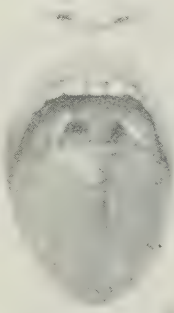
The earlier the anti-toxin is given the more striking the results. The following little table from the Metropolitan Asylums Board statistics shows the tremendous importance of giving the anti-toxin at the very beginning of the attack :

Number of cases treated	Day of disease on which anti-toxin was given	Fatal cases
2,135 .. ..	1st day .. ..	0
1,441 .. ..	2nd day .. ..	62
1,600 .. ..	3rd day .. ..	178
1,276 .. ..	4th day .. ..	220
1,645 .. ..	5th day or later .. ..	308

In other words, out of 2,135 patients inoculated on the first day, every single one recovered, whereas out of 1,645 in which there were five or more days' delay, 308 (almost 1 in 5) died.

As only a trained physician can give the inoculations, it is absolutely essential that a doctor should be called in at the very earliest possible moment whenever diphtheria is suspected. Even a few hours' delay in giving the anti-toxin may make all the difference between life and death for the patient.

Sometimes following on the injection of the anti-diphtheritic serum, pains in the joints are complained of, and a red, blotchy rash may develop on the face. These symptoms, however, soon pass off, and are of no importance whatever. They are simply mentioned here so that their appearance may not unduly disturb the mother or nurse. (See ANTI-DIPHTHERITIC SERUM, page 112.)



DIPHTHERIA MEMBRANE ON THE TONGUE  
From St. Bartholomew's Hospital Museum.

**General Treatment.** On the first suspicion of diphtheria, the patient should be isolated in a room away from all other members of the family, particularly the children. One person only, the child's mother, or the nurse who is to look after the case throughout, should be allowed to visit him. The mother or nurse should, if possible, sleep in a room adjoining that of the patient, and should not have meals with or come into close contact with any of the other members of the family. Cases have been reported in which the nurse, without contracting the disease herself, has carried the germs from the patient to a third person.

In young children it is sometimes quite impossible to apply successfully any local treatment to the inflamed and swollen throat. The attempt, however, should be persisted in, for local treatment in the early stages may have great influence on the subsequent course of the disease. As the patient is very apt to cough into the face of the nurse or doctor when examining or painting the throat, some form of face mask (such as can be obtained from any chemist) should always be worn.

A simple and effective application is peroxide of hydrogen, mixed with equal parts of water. Twist a little pad of cotton wool on the end of a six inch twisted paper spill, dip the cotton in the peroxide solution, and then, holding the mouth open by pressing a cork between the jaws, swab out the whole back of the throat. This may be done three times a day as long as the membrane persists.

Sometimes the growth of the membrane is so rapid that the child seems in imminent danger of choking to death. Vomiting, brought on by giving a teaspoonful of wine of ipecacuanha may ease the breathing, by leading to the coughing out of the obstructing membrane.

As dryness of the throat often adds greatly to the child's discomfort, a kettle constantly boiling in the room, by rendering the atmosphere more moist, is often very grateful.

To relieve the pain and swelling in the throat, hot applications may be applied to the neck, or cloths wrung out in iced water.

The diet should be entirely liquid, milk and broths and as much water as the patient wishes.

There are no internal medicines which shorten the course of the disease or reduce its danger.

The physician should be in attendance from the start of the disease, as at any time it may be necessary to give strong heart stimulants. Also at any moment the difficulty of breathing may become so great as to necessitate the immediate operation of tracheotomy, that is, inserting a tube into the windpipe through an incision in the throat, so that air can be breathed directly into the lungs.

**Complications.** Through the action of the diphtheria poison on the nervous system paralyzes of widely varying extent may develop. The palate, certain eye muscles, or arm or leg muscles may be attacked, leaving the patient with defective speech, a squint or drooping eyelid, or lameness which may persist for months.

The paralyzes may come on as early as the second week of the disease, or late in convalescence. The likelihood of paralysis developing cannot be gauged from the extent of the membrane in the throat, or even the severity of the general symptoms at the height of the disease.



Sometimes after the mildest of attacks marked and extensive paralysis may result.

Heart failure is responsible for a large percentage in deaths in diphtheria. A gradual slowing and weakening of the pulse, coming on in the second or third weeks of a severe attack of diphtheria, should be taken as a grave warning that the heart is succumbing to the action of the diphtheria poison in the blood. Even when convalescence is well advanced, the danger of heart failure should never be forgotten. All exertion and excitement, therefore, should be avoided until a complete recovery has been made.

Kidney disease is another dangerous complication of diphtheria. The presence of any quantity of albumin in the water (*for tests see* ALBUMIN *page* 52), and the sudden diminution in the amount of water passed is always a grave sign as indicating acute inflammation of the kidney.

**Treatment of Complications.** The best preventive against the dangerous complications of diphtheria is the strict confinement to bed of the patient from the onset of the disease until convalescence has been practically completed.

By keeping the patient in bed for a fortnight after he feels he is ready to be up and about, the dangers of heart failure (brought on by over-exertion), or kidney disease (induced by chill), are greatly reduced. In the same way, experience has proved that the risk of paralysis developing is greatly increased by letting the patient up too soon.

**DIPLOE.** The stratum of spongy bone in the skull which is situated between the hard outer and inner layers. It contains the blood-vessels which nourish the skull.

**DIPLOPIA.** When the muscles which control the position of the eyeball fail to move in unison, double vision, called diplopia, results from the images of the object seen falling on parts of the retina of the two eyes which do not correspond. Injury or paralysis of the nerves which supply the eyeball muscles may bring on diplopia. The treatment of the condition is included in that of the disease or injury from which it arises.

**DIPSOMANIA** means a mania for drink. (*See* ALCOHOLISM.)

**DIRT EATING** is a not uncommon faulty habit of children, which should be checked at the onset. In some cases it may signify a real want of the body which is not supplied by the food given.

The practice of sucking a "comforter" is said to develop a tendency to dirt-eating. Of course it is a dangerous habit, for not only may the dirt form hard masses in the intestines (producing pain, constipation, or diarrhoea), but disease germs may also find entrance. The parasite of the dog which causes hydatid cyst, is, for instance, often present in the soil of gardens.

The typhoid fever bacillus and other germs may also be swallowed by the dirt-eating child.

Great firmness should be used to stop the habit. At the same time it is well to consult a doctor who may, on examination, find some physical cause for the child's morbid tendency.

**DISARTICULATION** means the cutting off of a limb at a joint.

**DISCRETE SMALL-POX** is the name used when the eruptions remain separate. In the more serious confluent small-pox the pustules run together.

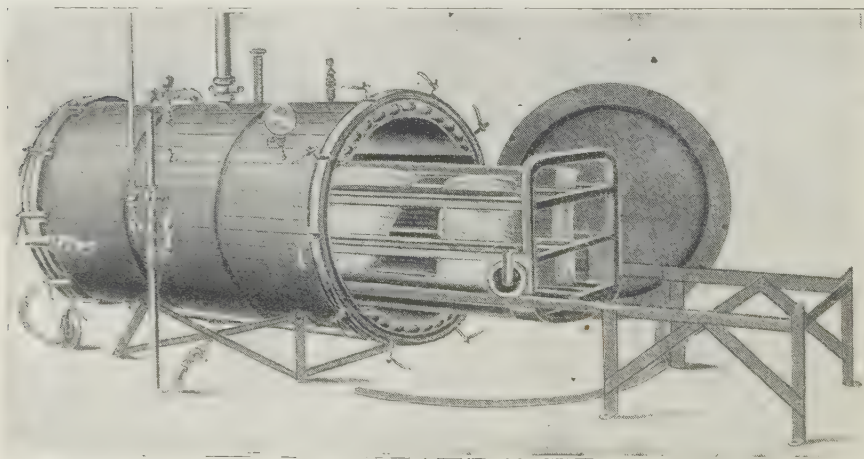
**DISEASE OF THE SPINE.** A popular name for caries of the spine. Also called Pott's Disease and Angular Curvature. (*See CURVATURE OF THE SPINE, page 530.*)

**DISINFECTANTS** are used to destroy the germs of disease which may lurk in the air of rooms, in curtains and carpets, etc., in clothes, on the body itself, and in the excretions of the body.

**Natural Disinfectants.** *Sunlight*, because of the power it has to kill most disease germs exposed to its rays, is one of the best disinfectants we have. *Fresh air*, because of its oxidising action, is perhaps the second most useful natural disinfectant.

It follows that it is all-important to have an abundance of sunlight and fresh air in all living rooms, particularly if there is a constant source of contagion about, such as a consumptive in the family. Germs which do escape into the atmosphere and settle on the curtains and carpets, etc., soon lose their virility if the room is constantly full of sunlight and fresh air.

*Heat.* For disinfecting washable articles, such as the sheets from a typhoid patient's bed or the cap of a child with ringworm, boiling or steaming for twenty minutes provides a thorough means of disinfection. *Dry heat* may be



STEAM DISINFECTOR FOR BEDDING AND OTHER WASHABLE ARTICLES



A PUBLIC DISINFECTING STATION IN PARIS

Boyer

used for articles which would be injured by boiling or steaming. Special ovens, such as are installed at disinfecting stations in most large towns, are usually required for this. As a general rule, bedclothes and underclothes which have been soiled by the discharges of a person suffering from a contagious disease should be soaked for half an hour in a tub of carbolic acid solution, one part of carbolic acid to fifteen parts of water, before being steamed or boiled.

**Chemical Disinfectants.** Carbolic acid, the perchloride of mercury, formalin, and the numerous proprietary disinfectants, Jeyes fluid, Sanitas, Condy's fluid, etc., all act by their direct germicidal powers.

*N.B.* Practically all chemical disinfectants are deadly poison if taken internally.

*Carbolic Acid.* For disinfecting slight wounds, such as a cut or deep scratch on the skin, a solution of one part carbolic to forty parts water is safe and effective when applied outwardly. When used for soaking undergarments or bedclothes a strength of one part acid to fifteen or twenty parts water may be used.

*Perchloride of mercury* is a very valuable disinfectant, its chief drawback being that it is a very deadly poison if accidentally drunk. To render it more efficient and penetrating in its action hydrochloric acid is sometimes mixed with it. As a skin disinfectant a strength of one part of the perchloride

to two or three thousand parts of water may be used. As a disinfecting medium into which may be emptied the expectorations of consumptives or the excretions of a typhoid or cholera patient the following mixture may be used :

R

Perchloride of mercury .. .. .	1 teaspoonful
Hydrochloric acid .. .. .	2 teaspoonsful
Water .. .. .	1 gallon
Colouring matter, a sufficiency. Label: "Poison."	

This strength solution also makes a useful and cheap disinfectant for pouring down drains.

To prevent accident all perchloride of mercury solutions such as the above should be tinted with some strong aniline dye so as to be readily recognised as poisons.

**Gaseous Disinfectants** are chiefly used for fumigation of rooms in which patients suffering from infectious diseases have been living.

The object here is not only to destroy any disease germs floating in the air, but also to kill off any that have settled on the walls, ceiling, floor, furniture, or hangings, etc. The drawback to this form of disinfection is that, whereas all micro-organisms on the surfaces which are reached by the disinfectant are killed, gases do not penetrate far beneath the surface. Therefore, in disinfecting a room after illness, the walls and surfaces should first be well rubbed down with breadcrumbs, or else sprayed with a perchloride solution before using the gaseous disinfectant.

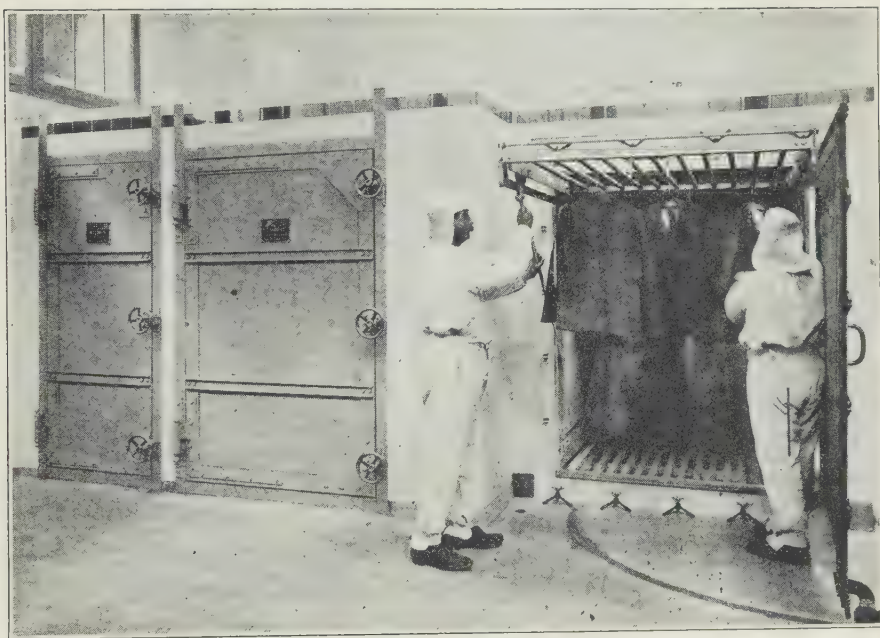
*Sulphur Gases.* These may be generated by burning ordinary roll sulphur in a metal pan, a little spirit having been poured on the sulphur to make it burn more readily. All air outlets in the room must, of course, be carefully sealed up, paper being pasted over the cracks

of the door and windows, and the fireplaces being stuffed up with an old sack containing rags. As the sulphur vapour is heavier than ordinary air, the pan containing the burning sulphur should be placed on the top of a pair of steps so that the fumes may reach the ceiling and upper part of the walls as well as the lower parts of the room.



DISINFECTING BOOKS WITH FORMALDEHYDE





Boyer

## DISINFECTING ROOMS WITH SULPHUR AND FORMALDEHYDE

Silver and bronze articles should first be removed, as the sulphur fumes will tarnish them. Two pounds of sulphur should be burnt for every thousand cubic feet of space in the room. (The number of cubic feet in a room can be estimated by multiplying the length by the height and the result by the breadth.)

The room should be left undisturbed for a full twenty-four hours, and then it should be thoroughly ventilated by leaving all the windows and doors wide open for another twenty-four hours. The person who first enters the room to open the windows, etc., should wear over the mouth a cloth wrung out in a solution of washing soda.

On the third day the furniture in the room should be wiped down with either a strong carbolic solution (*see above*) or else with a strong perchloride solution (*see above*). Perchloride of mercury, it should be remembered, will discolour all metallic objects.

The paper on the walls of the room should be stripped off, and the walls and the floor should be scrubbed down with a one-in-twenty carbolic acid solution. All bedclothes, curtains, towels, etc., should also be sterilised either in carbolic solution or by moist heat. Baking in dry heat is by no means as efficacious as steam sterilisation or boiling, since dry heat will penetrate only a short way beneath the surface.

*Formaldehyde gas* is a more powerful germ destroyer than sulphur, and is also more penetrating. Its chief objection is that it has to be generated

in a special lamp or burner. Numerous preparations and the lamps for generating the disinfecting gas can be obtained from chemists, together with detailed instructions as to the amount to be used for different-sized rooms.

*Chlorine gas* may also be used for disinfecting sick rooms, its drawbacks being that silk materials are apt to be damaged by it as well as metals, and that it is rather expensive. As this gas is also heavier than air it should be generated, as in the case of sulphur gases, from the top of a step-ladder in the centre of the room. It is prepared by allowing ordinary hydrochloric acid to come into contact with bleaching powder. Two pounds of bleaching powder and one pound of ordinary commercial hydrochloric acid are considered adequate for every thousand cubic feet of space in the room.

**DISLOCATIONS.** When the head of a bone as a result of wrenching or injury is pulled or dragged away from out of its socket in a joint it is said to be dislocated. Unlike fracture, where the bone itself is broken, the only torn structures in a dislocation are the tissues and ligaments which hold the bones of the dislocated joint in position.

The great majority of dislocations are "simple"—that is, the skin over the dislocated joint is not torn. Where there is great force, however, the head of the bone may protrude through the skin, forming a "compound" dislocation.

While the great majority of dislocations are due to accident, in some cases they are congenital.

**Diagnosis.** There is usually unmistakable deformity of the joint. Comparison of the joint with the corresponding one on the other side of the body will, therefore, show either a lump or a hollow which should not be there in health. Apart from the pain caused on manipulation, the patient will complain of being unable to move the joint from its fixed position. This symptom differentiates dislocation from fracture, since in the latter injury there is usually abnormal mobility of the part. The grating of the torn ends of the bone on one another, which can usually be observed on gentle manipulation at the seat of a fracture, is, of course, lacking in a dislocation.

**Treatment.** Dislocations which have occurred within a few hours or days of observation may sometimes be easily reduced (that is, the head may be slipped back into its normal position in the joint) by a few simple manipulations. Great force, however, should never be used, for the bone may in this way be broken, greatly complicating the treatment. Also important structures, such as veins, arteries, or nerves about the joint, may be seriously injured.

In reducing a dislocation by manipulation, the aim is not to *jam* the head of the bone directly through the tissues which may have slipped between it and its normal socket, but to rather coax it to thread its way back into the joint along the path through which it left it. In this way there will be a minimum of damage done to the soft parts about the joint, and healing will be encouraged.

**DISLOCATION OF ANKLE** is rare, except in combination with fracture of one of the long bones of the lower leg. An anæsthetic is always required in these cases, for only when the muscles are fully relaxed can the surgeon make a proper examination so as to determine the manipulation necessary to get the bones back into position.

**DISLOCATION OF ELBOW.** There is rarely any difficulty in diagnosing the condition. The arm is fixed at an angle, and the operator can usually note that the bones which make up the joints are not in their normal position by comparing them with those of the uninjured elbow. In the commonest type of elbow dislocation the observer, on running his finger down the back of the humerus or upper arm bone, will at the elbow joint come up against an abnormal bony prominence not found on the other elbow. This prominence is caused by the two lower arm bones being pushed backwards and upwards.

**Treatment.** The operator stands in front of the patient, and, placing his foot on the patient's chair, he draws the hollow of the injured elbow up against his knee. With one hand against the back of the elbow, and the other grasping the patient's wrist, he gives a firm pull, pressing the lower end of the upper arm bone backwards with his knee, and at the same time pulling the lower arm forward and bending it at the elbow.

After reduction, the arm should be kept in a sling for at least three weeks. A splint is rarely necessary except in delirious cases or young children. A well-padded L-shaped splint may, however, be applied to the inner side of the arm and forearm for ten days after the accident, as additional security. To reduce the inflammation, a towel wrung out in lead water and laudanum solution may be loosely wrapped about the reduced joint, being changed as soon as it gets dry.

**DISLOCATION OF THE FINGER.** Although the bones of the finger are held in position by very strong ligaments, dislocations, usually the result of the fall, occasionally occur. Reduction is usually easy, being accomplished by first pulling on the finger and then sharply bending it into the position taken when the hand is clenched.

**DISLOCATION OF HIP.** The leg is usually bent at the knee, turned outward from the hip and quite immovable. On account of the spasmodic contraction of the large hip muscles, and on account of the pain, no attempt should be made to reduce the dislocation until the patient has been anæsthetised.

As the necessary movements for reduction are somewhat intricate, and have to be adapted in each case according to the type of dislocation present, further details need not be given here.

After the surgeon has reduced the dislocation and got the bone back again into its normal position, the patient should be put to bed on a flat mattress, lying on his back. To prevent re-dislocation, when coming out from the anæsthetic or from unconscious movements during sleep, the leg may be kept in position by tying the ankles and knees together with a soft towel.



The patient should not be allowed out of bed for at least a month after the dislocation. He then should use crutches, and walk with the greatest caution for the next month. If there has been much wasting of the muscles from disuse, massage and electricity may be required.

**DISLOCATION OF HIP, CONGENITAL.** Sometimes through imperfect development before birth, or through injury at the time of birth the head of the thigh bone may not fit accurately in the cup, or acetabulum, of the pelvis. The condition, which is commoner in girls than in boys, may not be noticed until the child begins to try to walk, although there is usually more or less shortening and turning inwards of the leg. Sometimes both hips are dislocated, and then, the "scissors leg" condition resulting, the two knees being bent inward and interfering with one another, may prevent walking.

There is no pain in the earlier stages, but as the child gets older, and attempts to walk about, the constant weight falling on the soft parts about the hip joint sets up a low grade inflammation with a varying amount of pain.

In order to allow the foot of the shortened leg to reach the ground the pelvis is bent forward, making more pronounced the normal forward curve of the lower part of the spine. The child has a characteristic waddling gait.

**Treatment.** In a very early case, diagnosed before the child has made any great attempts at walking, by pulling downward on the thigh, and at the same time turning it outward, it is usually fairly easy to bring the head of the thigh bone back into the cup of the pelvic bone into which it should fit.

By carrying out this procedure morning and evening, and strengthening the muscles of the part by massage around the head of the bone, in slight cases the deformity sometimes can be overcome in a few months. As long as the bone tends to slip out the child should not be allowed to walk.

In children of from three to six the "bloodless operation," consisting of forcibly threading the head of the bone through the muscles and ligaments back into its normal position, while the patient is under an anæsthetic, and then fixing it for some months in a plaster cast often gives good results.

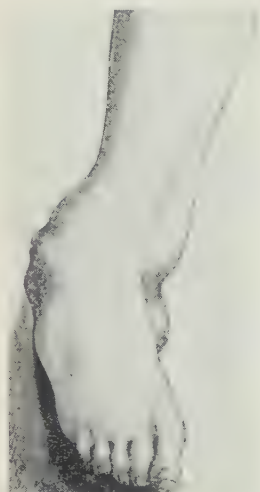
After three months the child should be allowed to get about with crutches, occasionally putting a little weight on the leg. The cast should not be taken off, however, until at least six months have passed.

In children older than six an operation in which the joint is opened up, the socket is cleared out, and the head of the bone fixed in it, is usually required.

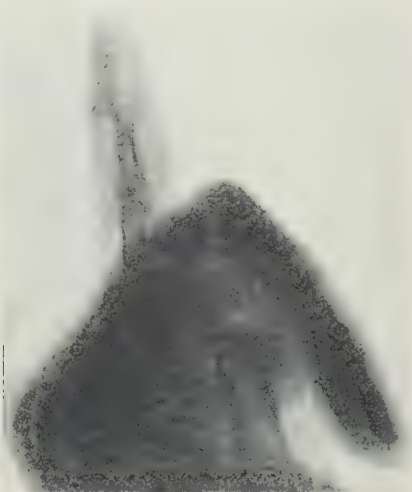
**DISLOCATION OF JAW.** The pain, fixation of the jaw, protruding chin, and inability to make the teeth meet properly, make the diagnosis easy.

**Treatment.** The operator stands in front of the patient, who is seated in a low, hard chair against the wall, with the back of his head touching the wall. Wrapping bandages around his two thumbs (so as to protect them from the teeth), the operator places the palm downwards against the lower teeth on each side of the jaw. Grasping the under surface of the jaw-bone with his fingers,

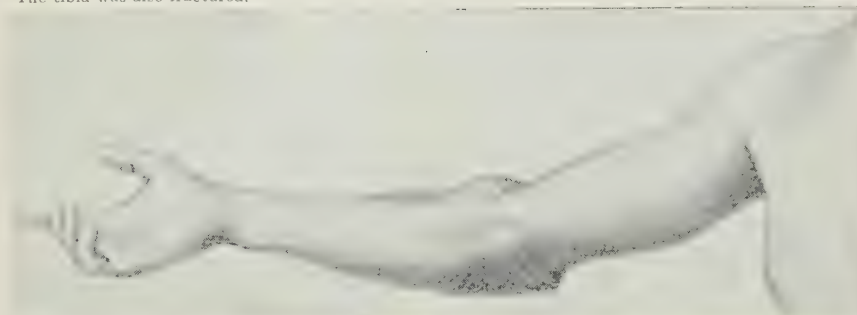




LONG STANDING ANKLE  
DISLOCATION  
The tibia was also fractured.



RADIOGRAPH OF DISLOCATED FINGER  
X-ray by Mr. F. H. Glew.



EXTERNAL APPEARANCE OF DISLOCATED ELBOW



DIAGRAM SHOWING DISPLACEMENT OF ULNAR IN DISLOCATED ELBOW

he presses the backward part of the jaw downward while his little and fourth fingers of the two hands push the front of the jaw upward. The jaw can usually be felt to slip backward into position with a snap.

After reduction the greatest care must be taken for months that the dislocation does not occur again, or the capsule of the joint may become permanently torn so that the jaw is constantly slipping out. A firm bandage should be immediately applied and kept on for at least a fortnight. During this time the patient should be fed entirely on soft foods which can be sucked through the teeth and swallowed without chewing.

**DISLOCATION OF THE KNEE** is very rare on account of the great strength of the ligaments about the joint. The diagnosis can readily be made by comparing the deformed, immovable joint with the healthy one on the other side.

To reduce the dislocation, the physician usually has to give an anæsthetic, when, by forcibly bending the joint and at the same time pulling the lower leg downwards, while the assistant holds the thigh firm, the bones can be made to slip back into place. A well-padded back splint, stretching from the ankle to well up the thigh, should be applied and kept on for at least a month. If the joint is moved too soon, permanent weakness of the joint may result. A heavy plaster of Paris splint may be applied in place of the back splint. (*See SPLINTS.*)

**DISLOCATION OF THE SHOULDER** is much the commonest of all dislocations. The accident is usually the result of a fall or a sudden twisting of the arm. Because there is no real "cup" for the joint, and on account of the wide range of movements at the shoulder, the head of the bone may be dislocated into a number of different positions. It may lie just below its normal position (when the head of the bone can usually be felt in the armpit), it may slip forward into the hollow under the outer end of the collar-bone, or it may slip round towards the shoulder blade.

On account of the large number of important structures closely surrounding the shoulder joint, there is always danger of causing severe injury if any great force is used in attempting to reduce a dislocated shoulder. The difficulty of reduction is always increased by the spasmodic contraction of the great muscles about the joint. To relax these muscles and to relieve the patient's sufferings, a few whiffs of chloroform should in most cases be given by the surgeon before reduction is attempted.

When the patient's muscles have been relaxed in this way, the surgeon sits on the patient's bed facing him and, having removed his boot, puts the sole of his foot in the injured armpit. Then grasping the patient's forearm with both hands, he pulls it downward and outward. This loosens the head of the bone so that, his foot pressing it outward, it slips back to its normal position when the arm is again brought to the side and downward pressure is ended.



CONGENITAL AND UPWARD HIP DISLOCATIONS

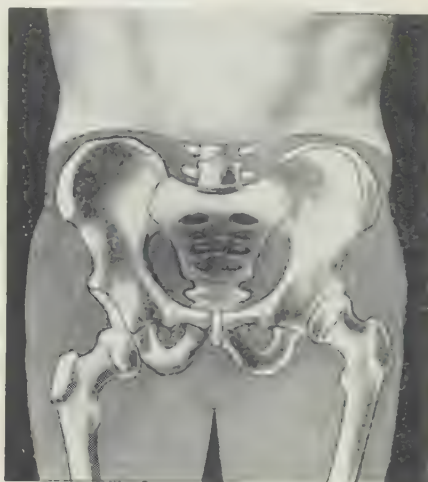
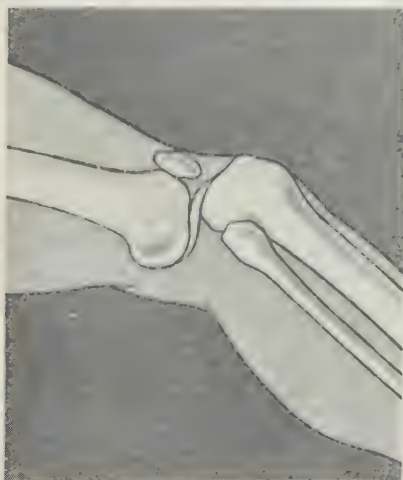


DIAGRAM OF HIP DISLOCATION DOWNWARDS



DISLOCATED KNEE



DISLOCATION OF JAW JOINT

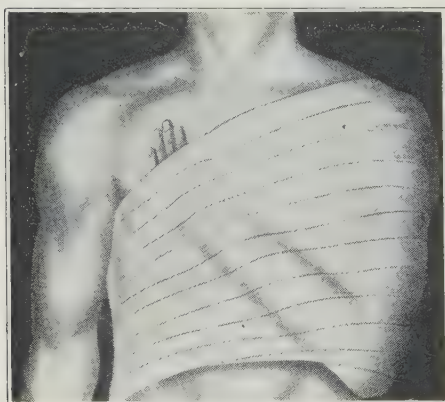


EXTERNAL APPEARANCE IN DISLOCATION OF KNEE

A much more scientific method of inducing the bone to return to its place is that known as Kocher's. By this method, unless the patient is a very muscular man, the dislocation can frequently be reduced without an anæsthetic.

Standing at the side of the patient who is lying on his back on a couch, his injured shoulder just projecting over the edge, the surgeon grasping the wrist in one hand bends the arm into a right angle at the elbow. With his other hand he grasps the patient's elbow, pressing this against the patient's side while he turns the hand away from the body as far as it will go. Keeping the arm in this position, he swings the elbow inwards across the front of the chest until it almost touches the nipple on the uninjured side. Keeping the elbow fixed in this position, he rapidly swings the forearm over until the wrist touches the top of the uninjured shoulder.

The movement is finished by swinging the arm from here down across the front part of the chest and abdomen until it lies parallel with the side. During this last stage the head of the upper arm bone will often slip back with a little click into its socket.



BANDAGE FOR DISLOCATED SHOULDER

If, after trying either of these methods with a moderate amount of force several times, the head of the bone fails to slip back into its normal position all further efforts should be discontinued until the surgeon's arrival.

After reduction, a large pad of cotton should be placed in the armpit, and with the palm of the injured arm placed over the opposite breast, the whole arm and shoulder should be

bandaged to the side. After ten days the bandage may be left off, but the arm should be kept in a sling for another fortnight. The patient may now begin to make a little use of the arm, but he should remember to avoid all sudden movements for at least another month.

After one dislocation of the shoulder, the accident is very likely to occur again. In some cases the torn joint capsule may never close properly, so that the head of the bone may be constantly jumping out of its socket. There is practically no preventive treatment for these recurrent dislocations. All the patient can do is to learn by experience the combination of movements most likely to cause dislocation so that he can best avoid them.

**DISLOCATION OF THE THUMB** sometimes results from a fall on the extended hand, the palmar end of the next-to-last bone of the thumb being dislocated backwards on the bone covered by the ball of the thumb.





DOWNWARD DISLOCATION OF SHOULDER



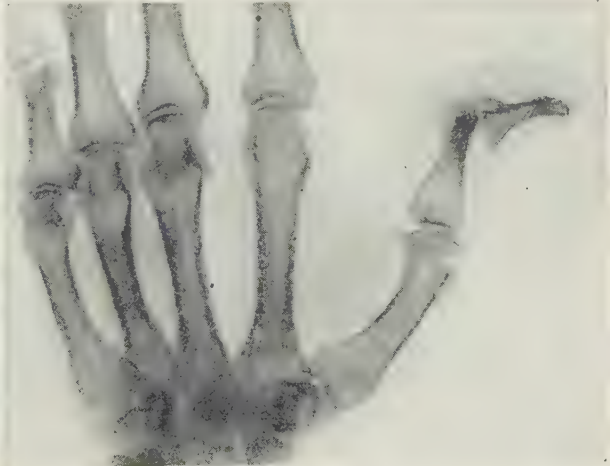
EXTERNAL VIEW OF UPWARD SHOULDER DISLOCATION



EXTERNAL APPEARANCE OF DISLOCATED WRIST



DISLOCATED WRIST



X-RAY PHOTOGRAPH OF DISLOCATED THUMB

### SHOULDER, WRIST, AND THUMB DISLOCATIONS

The case of dislocated shoulder is from Guy's Hospital; the radiograph of thumb dislocation is by Mr. F. H. Glew.

Treatment consists of bending the free end of the thumb backwards almost at right-angles, and then pulling the whole bone forwards, and at the same time suddenly "clenching" the thumb.

Sometimes a dislocation of the thumb is impossible to reduce until certain of the ligaments through which the head of the bone has threaded its way in getting into its false position have been divided by the surgeon.

**DISLOCATION OF WRIST** is usually the result of a fall on the palm of the hands. Diagnosis is usually easy, for on the examiner's drawing his finger downwards along the back of the forearm towards the hand, it meets a prominent ridge formed by the wrist bones dislocated backwards.

**Treatment.** The assistant stands behind the patient, holding his forearm steady with the back of the hand upwards. The operator standing before the patient, and grasping the injured hand, gives it a sharp little pull towards him, at the same time pressing the dislocated wrist bones downwards and back into position.

A bandage and a splint to prevent re-dislocation and to rest the part for a fortnight complete the treatment. Before applying the splint, which should extend from the palm of the hand well up the fore arm, a handkerchief wrung out in lead water and laudanum may be wrapped round the joint to allay any pain and inflammation. The splint should be worn for at least three weeks, and for a month after it is left off the greatest care should be taken to throw no sudden strain on the wrist joint.

To prevent stiffness daily passive movements should be begun about ten days after the dislocation has been reduced. The splint should be carefully removed by the nurse, who then, holding the wrist and forearm firm in her two hands, gently bends and straightens the wrist joint a few times.

**DISLOCATIONS OF LONG STANDING.** When weeks or months have passed since the dislocation took place, the difficulties of reduction are greatly increased. As a general rule the layman should make no attempts to reduce any dislocation of more than a few days standing. Even then, if he is unsuccessful after using very moderate force in the manner described above under the separate headings, he should desist at once, simply devoting his efforts to making the patient as comfortable as possible until the arrival of the surgeon. Any great strength applied, except with a full knowledge of the anatomy of the parts, is almost certain to increase the damage.

Sometimes it is impossible in long-standing cases for even the experienced surgeon to reduce the dislocation, although the patient's muscles are relaxed under an anæsthetic. Here it may be necessary to open up the joint, and perhaps cut away a portion of the head of the bone, so that the limb can, at any rate, be got into a more useful position, even though the mobility of the joint be lost.

**DISSECTION WOUNDS.** Medical students, surgeons performing operations, doctors carrying out post mortem examinations, butchers, poulterers, fishmongers, cooks, etc., frequently suffer from poisonous wounds contracted in the course of their work, or through poisonous germs getting into existing cuts and scratches of the skin.

The seriousness of the consequences depends on two factors—namely, the state of the person's health, and whether the dead person or animal was suffering from some germ-caused disease. In the former case, if the person is in perfect health, the wound will probably do no more harm than an ordinary cut. In other cases a little pustule forms, the area around becomes inflamed, but nothing further occurs. When the person is in a bad state of health or run down by excessive drinking, the poison may spread to the nearest lymphatic glands. These enlarge, and may suppurate; or the cellular tissue may become inflamed, with swelling of the limb, severe pain, and general constitutional illness.

The second class, the infectious wounds, are very serious. When a surgeon gets a wound while operating on a subject (living or dead) attacked by erysipelas, septic peritonitis, pyæmia (pus in the blood), or other infections, he may rapidly develop all the symptoms of septicæmia (blood poisoning). Within a few hours he begins to suffer from great nervous depression, and may fall into a state of collapse. His pulses become feeble, his muscles twitch, his temperature rises very high (104 or 105 degrees), he may become delirious, vomit, and suffer from acute diarrhœa. In these cases death usually occurs within forty-eight hours. In other cases, the most prominent effects are rapid development of swelling, and severe pain in the region of the wound, the inflammation spreads up the arm, and suppuration sometimes occurs in the armpit, neck, and other parts. The patient may die of exhaustion or septicæmia (blood-poisoning). If he survives, his recovery is very slow.

**Treatment.** Immediately bind the part above the wound tightly with a strip of cloth or a thick soft cord. Wash the wound in solution of carbolic acid (1 in 20), or in hot water if this is not at hand. Then well suck the wound to remove as much as possible of the poisonous matter. The wound may then be dressed with wet antiseptic cotton-wool (*see* COTTON-WOOL), and covered with a piece of oiled silk. If the wound is infected, the surgeon should make free incisions in all swollen and tense areas. The limb should be kept immersed in hot solution of boric acid, a teaspoonful to the pint, for several hours a day. In the intervals apply lint wrung out of hot boracic solution.

The patient's strength must be kept up by plenty of nourishing liquid food—milk, broths, beaten-up eggs, and strong beef-tea. If the heart shows signs of failure, the surgeon may prescribe strychnine and other strong heart stimulants.

**DISSEMINATED SCLEROSIS, OR INSULAR SCLEROSIS**, is a chronic incurable disease, the result of the nervous tissues in various parts of the spinal cord and brain becoming gradually replaced by connective tissue.

The disease is commonest in young people and children, and may develop from no recognisable cause. In some cases its origin may be traced back to some acute infectious fever, such as scarlet fever or diphtheria.

**Symptoms.** Stiffness of the legs, with perhaps slight pain and loss of power, is usually the first symptom. Then the patient may notice that although his arm and hand muscles seem as strong as formerly, whenever he tries to use his fingers for any particular purpose, such as lifting a spoon or glass of water to his mouth, his hand trembles more or less violently. Any action that requires accuracy of muscle control—such as touching the tip of his nose with the end of his finger—becomes more or less impossible because of the involuntary jerking about of the hand. This jerkiness is known as an “intention tremor,” because it becomes more pronounced whenever the patient puts his mind on having his fingers or hand carry out some particular action. On the other hand, when the patient is at perfect rest in bed, with his hands lying by his side, all tremor may be absent.

Sometimes slight trembling persists even when the patient is lying perfectly quiet, but in these cases the jerky movements are always more pronounced whenever the patient tries to use his hands in a way requiring any delicate co-ordinated action of the muscles.

As the disease advances the tremor may affect the head and the legs as well, giving the patient a peculiar unsteady walk.

The second classic symptom, and the one which may, in fact, first draw the attention of the patient's friends to his state of health, is a peculiar jerkiness of speech. The words, instead of flowing smoothly, come out in little groups of syllables with unnecessary pauses in between.

The third diagnostic symptom is a peculiar constant movement of the eyeballs. No matter how hard the patient tries to focus his eyes on any object, this involuntary oscillatory movement of the eyes continues. This eye symptom, known as nystagmus, is often a valuable clue in seeking the diagnosis. Other less common symptoms are dizziness and degeneration of the great nerve of sight, the optic nerve. As the disease advances the mind often becomes more or less weakened.

The outlook is very unfavourable. The patient may live for years, but he eventually succumbs to the disease, or to some affection, such as general tuberculosis, which finds him in his weakened state an easy prey.

One of the most curious points about the disease is the tendency to sudden improvements in the symptoms which rouse false hopes that the patient is going to recover. For weeks, or even months, the classic symptoms may gradually lessen in severity, and then without warning the sufferer suddenly begins to go down hill again.



In diagnosing disseminated sclerosis the possibility of the symptoms being due to hysteria or paralysis agitans must not be overlooked. In hysteria there are usually other symptoms to show the true nature of the nervous breakdown, while in paralysis agitans the patients are practically always old people, the tremor continues even when the arm is lying at rest in the lap, nor is it made worse when the patient tries to carry out an act demanding delicate co-ordination of the finger and arm muscles, such as lifting a full glass of water without spilling any of it.

**Treatment.** Unfortunately, no treatment has ever been discovered which will cure or even markedly retard the progress of the disease. All that can be done is to protect the patient from chill and exposure, as there is always danger in these patients of a fatal pneumonia or tuberculosis developing.

**DIURETICS.** Anything which will increase the amount of water formed by the kidneys is a diuretic.

Water, bland mineral waters, and milk are natural diuretics. Examples of diuretics which increase the flow of urine by causing more blood to pass through the kidney arteries are spirits of nitre, gin, and other alcoholic beverages. Another class of diuretics, such as broom and digitalis, act by raising the blood pressure in the kidneys, and so causing more water to be secreted.

Whenever the kidneys are not doing their normal work of extracting from the blood the poisonous substances constantly forming in it diuretics are commonly prescribed. They may also be used when the kidneys must be asked to do more than their ordinary work, as in certain varieties of dropsy not due to Bright's disease. For example, when the tissues are more or less water-logged with fluids which have escaped from the blood-vessels in heart disease, the kidneys may have to be called upon to help get rid of the excess of fluid. Digitalis is commonly used in these cases. The doctor may, for example, order the following pill :

℞	Powdered digitalis leaves..	..	..	..	4 grains
	Powdered ipecac. root ..	..	..	..	2 "
	Green extract of hyoscyamus ..	..	..	..	12 "
	Compound rhubarb pill ..	..	..	..	8 "
Mix well, and make into six pills. One pill to be taken, and followed, if necessary, by a second in four hours' time.					

Where the dropsy is largely the result of liver trouble, as in cirrhosis, the following diuretic mixture is often of value :

℞	Potassium nitrate ..	..	..	..	30 grains
	Sodium sulphate ..	..	..	..	90 "
	Dilute nitro-hydrochloric acid ..	..	..	..	1 drachm
	Strong solution of calumba ..	..	..	..	3 drachms
	Spirit of juniper ..	..	..	..	40 drops
	Infusion of buchu ..	..	..	..	3 ounces
	Water ..	..	..	enough to make	6 ounces

Make into mixture, and take one tablespoonful every four hours.

In acute Bright's disease, and in simple congestion or chill of the kidneys, where the amount of water passed may be greatly reduced, the safest diuretic to increase the kidney secretion is a plentiful supply of ordinary water, weak lemonade, or weak milk and soda. The following is an excellent mild diuretic here :

R						
	Cream of tartar	..	..	..	..	1 drachm
	Fresh lemon-juice	..	..	..	..	2 drachms
	Boiling water	..	..	..	..	1 pint

Dissolve the cream of tartar in the water, and then add the lemon-juice, and a little sugar if desired. A glass full, cold, to be drunk every three hours.

The acetates and citrates also have a mild diuretic action which makes them of value in simple feverish states where the flow of urine is reduced. Below is a useful prescription :

R						
	Solution of ammonium acetate	..	..	..	..	3 drachms
	Potassium citrate	..	..	..	..	1½ "
	Spirit of nitrous ether	..	..	..	..	1 drachm
	Syrup	..	..	..	..	1 "
	Peppermint water	..	enough to make	..	..	8 ounces

Mix well, and take half to one tablespoonful every three hours.

In chronic kidney disease in the later stages the physician may have occasional resource to diuretics at times when the scantiness of the water suggests the possibility of uræmic symptoms developing. (See URÆMIA, page 300.)

The following is an excellent mixture in this class of case :

R						
	Potassium acetate	..	..	..	..	1 drachm
	Potassium nitrate	..	..	..	..	1 "
	Spirit of juniper	..	..	..	..	2 drachms
	Spirit of nitrous ether	..	..	..	..	3 "
	Decoction of broom	..	enough to make	..	..	8 ounces

Make into a mixture. Take two teaspoonsful every three hours.

**DIURETIN.** Five to fifteen grains is sometimes used in kidney or heart disease where it is hoped to relieve dropsy by stimulating the kidneys to form more urine. (See DIURETICS.)

**DIVER'S PARALYSIS.** This is a form of paralysis which is caused by working in compressed air. It usually affects the lower limbs and may involve the bladder and rectum. The symptoms are brought on by a too rapid return to ordinary atmospheric pressure, and may be prevented by gradually reducing the pressure under which work is carried on. (See CAISSON DISEASE.)

**DIZZINESS (GIDDINESS, VERTIGO).** A passing attack of giddiness is very likely to be due to disorder of the digestion. This troublesome complaint, however, may be the result of any one of an endless number of causes. It occurs



THE MIDDLESEX HOSPITAL, MORTIMER STREET, BERNER'S STREET, W.

The Middlesex Hospital was founded in 1745, the foundation stone of the present building having been laid in 1755 by the Duke of Northumberland. At one time it served as an asylum for Huguenot refugees from France. It was the first hospital to make and provide special treatment for cancer; the cancer charity dates from 1792, and a special cancer wing was opened in 1897. The illustrations show (1) Research Laboratory; (2) A Male Ward; (3) General Operating Theatre; (4) A Female Ward.

from slight causes in many people who are perfectly healthy, but in others it may be a symptom of serious disease.

Sometimes the subject feels himself to be reeling ; sometimes the objects around him seem to whirl. In severe attacks he may fall, but this is a rare occurrence in simple giddiness.

The sufferer from chronic gastric catarrh is very likely to be also a sufferer from attacks of dizziness. The connection between the two has not been clearly made out, but probably the faulty digestion of food leads to the absorption of nerve poisons into the blood, while at the same time the inflammation of the stomach causes disturbance of the circulation in the brain. In these cases the patient should carefully inquire into his diet. Probably he will find that he is eating some things which do not agree with him. These he must strictly avoid. Perhaps he takes too much tea or alcohol. In elderly people even quite small quantities of alcohol often produce an inflammatory condition of the stomach and obstinate catarrh. In some cases it will be found that abstaining from liquids at meals, and drinking (water or weak tea, etc.) only between meals suffices to cure the dizziness.

Fats and pastry should be used moderately, especially after middle life. Old people should eat sparingly. With the belief that they are supporting their strength they often eat too much. Haste at meals is a frequent cause of indigestion with consequent dizziness, flushings, and cold sweats.

The bowels must be kept very regular, and even when they act daily it is often desirable for middle-aged and elderly people to take an occasional mild aperient, such as :

R.	Confection of senna	..	..	..	..	1 ounce
	Confection of sulphur	..	..	..	..	1 "
	Mix well. Take one teaspoonful at bed-time occasionally when necessary.					

But this measure must not be overdone. Once in two weeks, or once a month is often enough in ordinary cases. Of course, when constipation is persistent stronger measures are necessary. But in this case the wisest course is to consult a doctor.

The liver may sometimes be in fault. In that case the treatment described for Biliousness (*page 213*) should be carried out.

Excessive smoking is another common cause of dizziness. This interferes with the digestion of food in the mouth, throws the stomach out of order, disturbs the circulation in the brain, weakens the heart, and has an enfeebling effect on the spinal cord and nerves. A heavy smoker always blames his pipe or cigar until their innocence is proved. By stopping smoking for a couple of weeks he will either cure the dizziness or demonstrate that it is due to some other cause. And it should be remembered that what may be moderate smoking for one person is excessive for another. There are many weak-nerved or weak-hearted men who should not smoke at all.



In neurasthenia dizziness is a common symptom. The patient feels light in the head and uncertain on his feet. He does not reel as in the giddiness of disease of the brain, the dizziness is more like that caused by tobacco. The attacks are liable to come on when the neurasthenic person stops or gets up from a chair or couch. The other traits of neurasthenia being present, diagnosis is readily made. The treatment in this case must be directed to the general neurasthenic condition.

Anæmia of the brain is a not infrequent cause of this unpleasant affection. People getting on in years, whose arteries are becoming inelastic (*see* ATHEROMA, *page* 155) often suffer from cerebral anæmia and the associated dizziness. A precaution to be faithfully observed is not to get up quickly when sitting or lying down, not to empty the bladder immediately on getting out of bed in the morning (this sometimes produces a fainting fit), not to make any sudden violent movement, such as jumping on an omnibus, or out of the way of a vehicle, and not to give way to intense emotion of any kind. The food should be light and nutritious. In some cases of cerebral anæmia iron tonics are of benefit, but they should not be taken without medical advice. The opposite condition, congestion of the brain, may also be a cause of dizziness. In this case cloths wrung out of cold water and applied to the head, give some relief. A mild aperient should be occasionally taken, the following being a not unpleasant salts preparation from Guy's Hospital pharmacopœia :

℞					
	Magnesium sulphate	..	..	..	$\frac{1}{2}$ ounce
	Pimento water	..	..	..	$1\frac{1}{2}$ ounces
	Acid infusion of roses	..	enough to make		6 ounces

Make into a mixture. Take two tablespoonsful before breakfast when required.

People subject to congestive attacks of this kind should not overwork the brain, and should take pains to avoid stooping.

Sometimes feelings of dizziness follow a violent fit of coughing or sneezing. In these cases the patient should lie down and close his eyes, and sip a little cold water.

The ear is often a source of this trouble. Collections of hardened wax, mixed as they frequently are with hairs and dust, may for a long time be the unsuspected cause of dizziness. The wax should be removed by gently syringing with warm water or oil. This operation is best carried out by a surgeon. It is always risky for an unskilled person to tamper with the ear.

A running from the ear, signifying inflammatory trouble within, may be accompanied by dizziness. In Menière's disease of the ear, dizziness is a most prominent symptom. The attack commences suddenly as a rule. A buzzing or roaring sound in the head is heard, the patient staggers and may sometimes fall if he fails to grasp a support. He may be unconscious for a moment. Then in a minute or two the feeling passes, he feels nauseated or may vomit, and a

clammy sweat breaks out on his face and hands. This disease can be treated only by an experienced surgeon.

The eye may be the cause of the dizziness. Errors of refraction are, indeed, a very common cause of a slight degree of this trouble. Suitable glasses will always cure it. These should be prescribed by an oculist, not bought at a chemist's or watchmaker's shop.

That form of dizziness which many people feel when looking down from a height, or even approaching the edge of a cliff is often a quite incurable idiosyncrasy. In other cases it comes on with age, or results from excessive smoking and tea-drinking, or follows some diseases such as influenza. Each class of cases needs its own appropriate treatment.

Dizziness is associated with many serious affections, such as disease of the heart, tumours of the brain, syphilitic affection of the brain, epilepsy, etc.

It is a great mistake, however, for any dizzy subject to conclude that he has some grave disease of the brain or any other organ because this one symptom is present. In the vast majority of cases the dizziness is due to some comparatively harmless and easily curable trouble. If it persists, and if it makes him anxious and uneasy he should go to a doctor and have his case diagnosed and properly treated.

**DOG BITE.** See BITES AND STINGS.

**DOMESTIC REMEDIES.** In every house there should be a medicine chest containing simple remedies for use in case of the smaller accidents and illnesses.

It may happen that a child is burned, cuts himself, gets an attack of croup, etc., and that the doctor when sent for is a long time coming. In these cases the prompt application of a remedy will relieve pain and sometimes save the child from serious developments. A child or adult may have toothache, suffer from constipation, sleeplessness, flatulence, and many other small ailments which are not serious enough to require medical attention. Some safe, simple remedy in the house is then very valuable.

Of course it is always the wisest plan to have medical advice even in slight cases of illness and minor accidents, for something at first quite trivial may be the forerunner of serious developments. But as the doctor may not always be able to come immediately, and as most people do actually make use of home remedies, it is advisable that they should have the best safe remedies available.

Many of the old domestic cures have very slight value. Their use gives a feeling that something is being done, and in itself this has advantages, soothing the patient's fears. But with the exception of mustard (for poultices and emetics), ginger, peppermint and dill-water to relieve flatulent distress, castor-oil, carron-oil, and a few others, most of these old remedies do little good, and have been rightly superseded by very effective modern drugs.

A medicine chest containing any assortment of drugs desired may be purchased at the chemists. Those containing drugs in tablet form are the best, for most of these drugs keep their active virtues for an indefinite time, and they are made up in fixed doses, so that no error can be made in the amount taken.

**Precautions for the Medicine Chest.** Anyone who does not care to go to the cost of buying one of these expensive medicine chests can use a small cupboard and stock it by degrees. Certain precautions should be observed, or otherwise the medicine chest may prove a dangerous piece of furniture. The chief of these are as follows :

Always keep the chest locked when not in use.

Have a separate shelf for all poisonous substances and external applications.

Keep poisons, liniments and lotions in blue fluted bottles with red labels.

Never use any drug in the dark.

Always read the label, however sure you may feel as to the contents, before use.

Do not use any medicine unless you *know* that it is suitable for the purpose.

Always *measure* doses of liquids in a graduated measure. Always weigh solids or use them in tablet form. It is popularly supposed that a drop is equal to a minim, a teaspoonful to a drachm, and a tablespoonful to half an ounce. But the drops of some fluids are three times as large as the drops of others, while teaspoons and tablespoons vary greatly in size. Then a "pinch" or "as much as will go on a sixpenny piece" may be twice the quantity when so measured by some people as when measured by others.

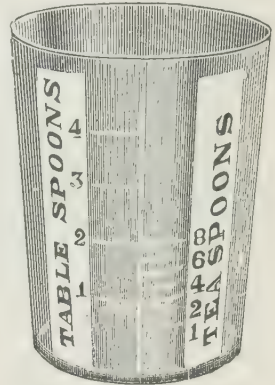
Buy the best medicines even if they cost a little more.

The most useful contents of the chest are the following :

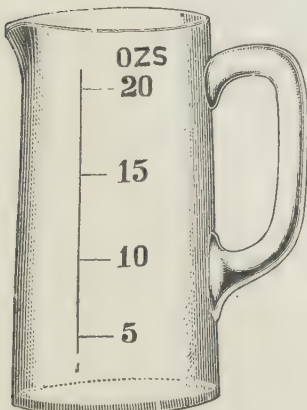
### **Appliances for the Medicine Chest.**

Two medicine measures, one to measure minims, the other to measure drachms.

A pair of scissors, which should not be used for any other purpose.



GRADUATED MEASURE



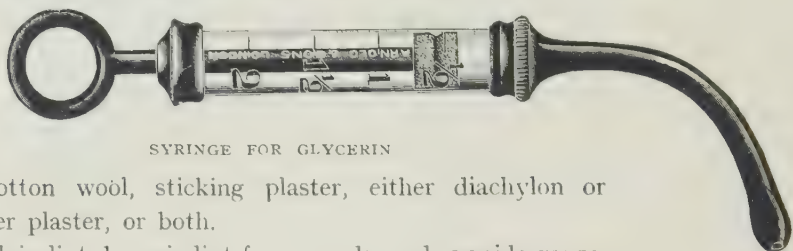
GRADUATED JUG

A clinical thermometer, which may be bought for a shilling to half-a-crown, to take the temperature in fever.

A bath thermometer, which should always be used when giving hot baths, especially in the case of children.

An enema syringe, which should be thoroughly cleansed and then hung up to dry after use.

Bandages half an inch thick, one inch and two inches wide.



SYRINGE FOR GLYCERIN

Cotton wool, sticking plaster, either diachylon or rubber plaster, or both.

Plain lint, boracic lint for wounds, and cyanide gauze, one of the best dressings for cuts and wounds.

Lint is much better than old linen; if the latter is used it should be well washed and then boiled to destroy the germs it always harbours.

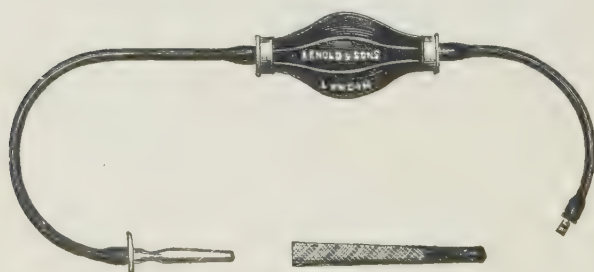
In taking the temperature place the end of the thermometer in the mouth for three minutes or in the armpit for five minutes. The armpit should first be well dried. The normal temperature is 98·8, slight fever 100° F., high fever 103° F. or over.

### Drugs for the Medicine Chest.

*Alum* : A good gargle is made with one drachm to half a pint of water. For perspiring feet put two teaspoonsful of alum in the footbath.

*Ammoniated Tincture of Quinine* : Useful at the commencement of a cold.

Dose, half to one drachm (teaspoon) in a large wineglass of water, every four hours. Dose for a child five to twenty drops, according to age.



AN ENEMA SYRINGE

*Arnica, Tincture of* :

A good application for bruises and sprains.

Should be mixed with water in the following proportions before use :

R	Tincture of arnica..	..	..	..	..	4 drachms
	Water	..	..	..	..	10 ounces

*Aromatic Spirits of Ammonia* : This is a safer heart stimulant than brandy. Dose 20 drops to a teaspoonful in half a wineglass of water.



*Bicarbonate of Soda* : Five to ten grains in a little water relieves acidity of the stomach. Good as a tooth-powder for general aching of the teeth. A half teaspoonful in a tumbler of water makes a good mouth-wash for smokers.

*Blue Pill* : Two to four grains at bedtime, followed by a seidlitz powder next morning is a good remedy in liverish conditions.

*Boric (or Boracic) Acid* : Useful in perspiration of the feet. Should be shaken into the shoes and stockings.

Makes one of the best eye-lotions in the strength of 10 grains to one ounce of distilled or boiled water. A good antiseptic to dust on wounds.

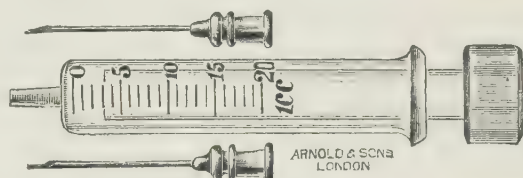
*Boric Ointment* : A mild and effective antiseptic ointment.

Good for cuts, burns, pimples, boils, etc. Rubbed into the head it helps prevent dandruff. Used on the nose and in the nostrils prevents soreness during a cold. A good application for tender skins after shaving.

*Brandy* : Much used as a stimulant in cases of faintness. Dose, two to four teaspoonsful, repeated once if necessary at an interval of ten minutes. It should not be given to an unconscious person.

*Bromide of Potassium* or *Bromide of Sodium* : Both are powerful soothing medicines when the nerves are overwrought. Taken three times daily for a few days before a sea-voyage the bromides sometimes prevent sea-sickness. In sleeplessness from nervous excitement they are frequently prescribed as sedatives. Dose, ten to thirty grains for an adult. Best taken in peppermint water or with a little ginger.

The bromides, it should be fully recognised, are powerful and dangerous



HYPODERMIC SYRINGE



CLINICAL AND BATH THERMOMETERS

drugs which, although they may well be kept in the house for emergencies, should never be used except on the physician's express orders.

*Camphorated Chloroform* : Relieves toothache. First put a little bicarbonate of soda in the tooth, then a pledget of cotton-wool saturated with the chloroform.

*Camphorated Oil* : A good application to the chest in colds and bronchitis. Should be well rubbed in.

*Camphor, Spirit of* : Useful in diarrhoea with pain. Dose, 30 minims in a wineglassful of water.

An old-fashioned home remedy for colds. Dose, four to five drops on a piece of sugar.

*Carbolic Acid* : Should be marked "Poison." A weak solution makes a good inhalation for colds in the head. Ten drops of carbolic acid are placed in a jug containing a pint of almost boiling water and the steam is inhaled. One part of the acid in 40 parts of water makes a useful antiseptic lotion for bathing cuts, bruises, wounds, etc.

*Cascara Sagrada* : One of the best aperient medicines ; it does not leave the bowels relaxed or confined after its immediate action has ceased. Dose, dried extract, two to eight grains. Liquid extract, half to one teaspoonful.

*Castor Oil* : A safe and effective purgative, especially when the intestines are irritated by indigestible matters. Dose, one teaspoonful to two table-spoonsful, according to age and the amount of purgation desired. Coffee disguises the taste. Can be obtained in capsules which leave no taste in the mouth.

*Chlorate of Potash* : Makes a good gargle for sore throat in the proportion of one drachm to half a pint of water. Tablets of this drug are equally useful in sore throat. A five-grain tablet may be allowed to dissolve slowly in the mouth. It is a mistake to use more than three or four in a day, as the drug is depressing.

*Dill Water* : Very useful for painful flatulence, especially in young children. Dose, one to two teaspoonsful for a young child.

*Epsom Salts* is a rather drastic drug but an efficient purgative. Should be used only very occasionally. A little ginger added helps to prevent griping. Dose, 30 to 120 grains, if several doses are to be given ; two to four drachms for a single administration.

*Friar's Balsam* : A good antiseptic lotion for cuts and burns. A teaspoonful placed in a jug of boiling water and the steam inhaled is a remedy for commencing colds, and for bronchitis.

*Glycerin* : Half to one teaspoonful in water is a good antiseptic to take when fermenting food causes dyspepsia. Mixed with an equal quantity of rose-water, glycerin is a useful application for keeping the hands soft.

*Ipecacuanha Wine* : A useful emetic medicine for children suffering from bronchitis or commencing croup. Dose, for a child, one to two teaspoonsful.

*Linseed* : For poultices.

*Liniments* : A good liniment for lumbago is made by putting one ounce of mustard and one pint of spirits of turpentine in a bottle, and letting it stand for three or four days, occasionally shaking the bottle. Then the clear liquid

is poured off. It should not be used in the first inflammatory stage of lumbago, but later when the most acute form has passed off.

Another very useful pain-killing liniment is made by mixing in a mortar equal quantities of menthol, camphor, and chloral hydrate. When thoroughly mixed they form a thickish fluid. To be rubbed in to the aching part.

*Mustard* : A tin of good mustard should be at hand to use as an emetic, for making poultices, putting in foot-baths, etc. Dose, as emetic : one to two teaspoonsful in a tumbler of warm water. A mustard poultice is made with three tablespoonsful of flour mixed with lukewarm water.

*Olive Oil* : A quarter to half a pint makes an effective enema in constipation. It should be warmed and mixed with half a drachm of boric acid. The oil should be retained by the patient as long as possible. If the bowels do not act it should be followed by an enema of warm water, one to two pints. One to two tablespoonsful by the mouth act as a mild aperient.

*Peppermint, Essence of*. Relieves painful flatulence. A few drops added to nauseous medicines help to disguise the taste.

*Permanganate of Potash* : Best kept in tablets. A very pale solution used as a gargle (none should be swallowed) effectively cleanses the mouth, and keeps the gums healthy. Forms a good cleansing lotion for wounds and ulcers. A strong solution may be used for cleansing utensils.

*Quinine* : Some one-grain pills and a bottle of the ammoniated tincture of quinine should be kept on hand. One or two grains two or three times a day form a good tonic, to be taken for a fortnight or so in the spring. Three grains twice a day for two or three days are a preventive of influenza. To prevent an on-coming cold a teaspoonful of the ammoniated tincture of quinine twice a day is a favourite home remedy.

*Compound Rhubarb Powder* : This is a good and safe aperient or purgative. Dose, 20-60 grains.

*Sal Volatile* : Good for flatulence, and as a heart stimulant, as in fainting. Dose, for an adult, half to one teaspoonful in a wineglassful of water.

*Vaseline* : This is a good basis for ointments as it does not become rancid. Mixed with boric acid (one drachm of boric acid to one ounce of vaseline) it makes an admirable antiseptic ointment for cuts, pimples, etc.

*Zinc Ointment* : A mild antiseptic ; good for chapped skin.

**Classification of Drugs.** The following is a classification of the purposes for which the drugs above-mentioned may be used.

**ACIDITY** : Bicarbonate of soda, five to ten grains.

**BLEEDING** : Cold water. Press absorbent wool on the wound. (*See also page 232.*)

**BRONCHITIS** : Camphorated oil rubbed into chest. Mustard poultices on chest. In a young child ipecacuanha wine as emetic.

BRUISES : Tincture of arnica diluted.

CHAPPED SKIN : Zinc ointment. Boric ointment.

COLDS : Inhalations of Friar's Balsam or weak carbolic acid solution.

By the mouth : Ammoniated tincture of quinine, in earliest stages only.

CONSTIPATION : Black draught, cascara sagrada, castor oil, Epsom salts, olive oil, rhubarb pills, enema of olive oil followed by warm water.

CROUP : Ipecacuanha wine.

CUTS : Friar's Balsam, boric acid, boric ointment.

DANDRUFF : Boric ointment, boric acid mixed with vaseline.

DIARRHŒA : Spirits of camphor, rice water, barley water.

EMETICS : Mustard, ipecacuanha wine, common salt, two teaspoonsful in a tumbler of warm water.

EYE LOTION : Boric acid, ten grains to one ounce boiled water.

FAINTNESS : Brandy in teaspoonful doses, sal volatile, strong black coffee.

FLATULENCE : Peppermint essence, sal volatile, dill water for children.

GARGLES : Chlorate of potash, alum.

INHALATIONS : Weak carbolic acid solution, Friar's Balsam.

LIVERISHNESS : Blue pill and seidlitz powder, magnesia.

MOUTH WASH : Permanganate of potash.

NERVOUS EXCITEMENT : Bromide of potassium or sodium.

PERSPIRING FEET : Boric acid in stockings. Wash feet in pale permanganate potassium solution.

SLEEPLESSNESS : Bromide of potassium.

SORE THROAT : Chlorate of potash.

SPRAINS : Tincture of arnica.

TOOTHACHE : Bicarbonate of soda, camphorated tincture of chloroform.

**DOSAGE.** Exact rules of dosage cannot be laid down as suitable for every case because individuals differ so largely in their toleration of different drugs. Again, many drugs have distinct and sometimes opposite effects depending on whether they are used in small or large doses. Again, the amount to be given frequently has to be varied with the patient's physical condition.

Dosage tables, therefore, should be looked upon simply as *vaguely suggesting* the amount which, in the *majority* of cases, would be an *average* dose of any particular drug.

As a general rule infants bear drugs badly, and in any case the amount must be greatly reduced. There are exceptions to this rule, however, as for example, belladonna, which is relatively well borne, by even young children. Opium, on the other hand, is very badly borne by infants and children, and hence should be used with the greatest precaution by the physician. Many deaths result every year from mothers giving their babies soothing syrups and quieting mixtures containing opium.





ST. MARY'S HOSPITAL, PRAED STREET, PADDINGTON

Above are seen the Hospital Buildings; below the Clinical Laboratory; and, inset, a part of the De Hirsch Children's Ward.

A rough rule for finding the dose of medicine suitable for a young child is to divide the child's age by its age plus 12. The resulting fraction denotes the fraction of an adult dose suitable for the child. For example, suppose that the correct dose of a certain medicine for a grown person was one teaspoonful. To find the corresponding dose for a child of eight divide the child's years, 8, by 8 plus 12. The result, 2-5ths, is the fraction of the adult dose, i.e., one teaspoonful, suitable.

The size of the individual, and the sex, has some influence on the amount of the dose. Thus, a small man would require a smaller dose than a person of twice his weight, and, generally speaking, women require slightly smaller amounts of medicines than men. Much, however, depends on the individual's idiosyncrasies. Thus, some drugs, tolerated in large amounts by the great majority of people, may cause violent symptoms of poisoning when taken in even moderate amounts by certain individuals. Children are particularly likely to show abnormal intolerance to drugs, hence it is a safe rule to give as few medicines as possible to infants and young children, and, whenever giving a new drug for the first time, begin with a minimum dose until its effect can be observed.

The length of time during which the drug is to be taken must also be taken into consideration in gauging dosage. Thus, with certain drugs, as, for example, the bromides in epilepsy, the dose has to be gradually increased up to a maximum, as the patient becomes accustomed to moderate doses. On the other hand, certain drugs have an accumulative action, that is, they are not readily excreted from the system, and so, when taken for months at a time, may suddenly set up symptoms of acute poisoning.

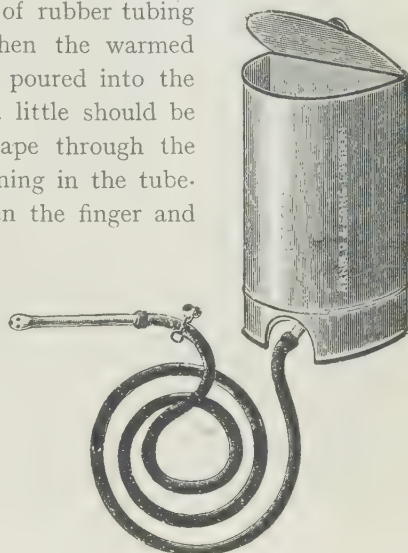
The manner in which a drug is introduced into the system must also be considered in setting the dose. Thus, while a quarter or a sixth of a grain of morphia might be a suitable dose when taken by mouth, the same quieting or pain-killing effect might be obtained by a smaller amount of morphia if injected hypodermically. If, on the other hand, the physician should decide to use the drug in the form of an opium solution introduced into the rectum, he will need to use a larger dose to get the same effect.

**DOUCHES** are used to cleanse or to apply fluid medicaments to cavities, such as the bladder or vagina, or they may be designed simply to stimulate the local circulation, as when alternate hot and cold douches are applied to a rheumatic joint.

Astringent douches are frequently used to allay the discharge resulting from catarrhal inflammation of a mucous surface, as in leucorrhœa. Antiseptic douches are used where germs are to be destroyed, as in gonorrhœal inflammation of the vagina.

The important point in a vaginal douche is that no great force should be used, and that there should be a free outlet for the fluid which is forced into the cavity to be cleansed or disinfected.

*How to Give a Douche.* The simplest and safest douche apparatus consists of a tin douche-can connected by six feet of rubber tubing with a hard rubber douche-nozzle. When the warmed solution has been prepared, it should be poured into the douche-can held in the left hand, and a little should be allowed to run down the tube and escape through the nozzle. This will force out any air remaining in the tube. The tube should then be pinched between the finger and thumb of the right hand just above its attachment to the nozzle, and the tip of this should be inserted no farther than three inches into the vagina. The patient should then raise her left hand holding the douche-can as far above her head as she can. At this elevation, the fluid will flow out of the nozzle with just the correct force. The douche-can should never be hung upon some convenient nail at an indefinite distance above the patient's head, otherwise the force of gravity may result in the fluid pouring into the vagina with too great force.



DOUCHE CAN AND TUBING

A vaginal douche should be used at a temperature of about 100° F.

A useful astringent douche for leucorrhœa is the following :

Rx

Alum..	..	..	..	..	..	40 grains
Zinc sulphate	..	..	..	..	..	20 "
Water	..	..	..	..	..	1 pint

As a mild antiseptic vaginal douche the following may be used :

Rx

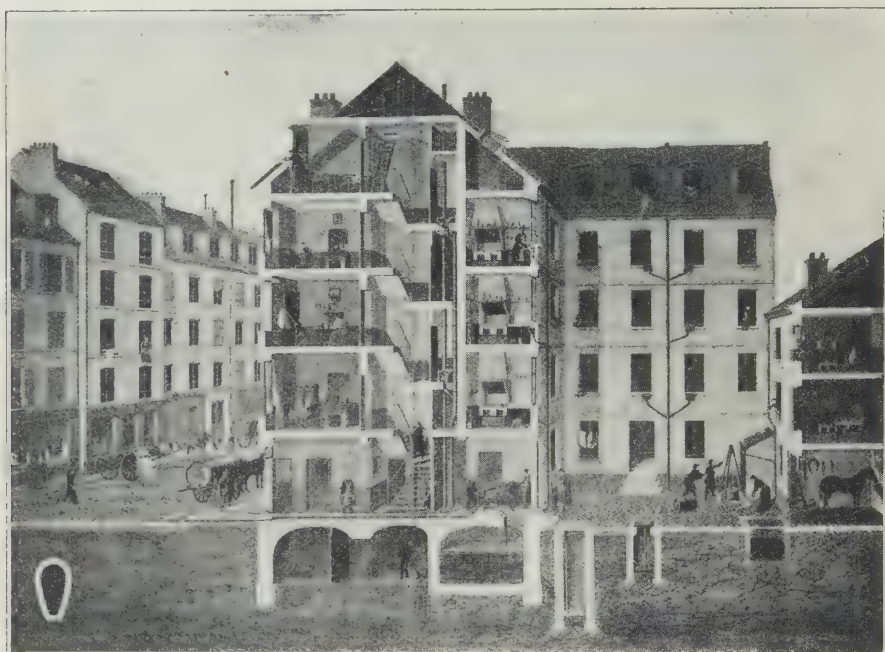
Creolin	..	..	..	..	..	20 minims
Water	..	..	..	..	..	1 pint

As a nasal douche for washing out the nostrils in chronic catarrh, and allaying irritation, the following is a useful lotion :

Rx

Borax	..	..	..	..	..	$\frac{1}{2}$ ounce
Sodium chloride	..	..	..	..	..	1 drachm
Distilled water	..	..	..	..	..	10 ounces

Make into a lotion. Add one tablespoonful to a pint of warm water, and use as a nasal douche.



SECTION OF A HOUSE IN 1820 SHOWING OLD SYSTEM OF DRAINAGE

Boyer

One of the principal causes of the prevalence of ill-health and infectious diseases a century ago is well seen in this diagram—house and street drainage, cesspools, stable drainage, and wells are all cheek by jowl and inevitably inter-communicating, while the “untrapped” sewers and drains make the escape of sewer gas into the house easy.

From a drawing in the Paris Museum of Hygiene.

**DOVER'S POWDER** is the common name for the Compound Powder of Ipecacuanha. It is made up of powdered opium one part, ipecacuanha one part, potassium sulphate eight parts. The official dose is five to fifteen grains.

Dover's Powder, because it acts as a mild diaphoretic, increasing the action of the skin and inducing perspiration, is largely prescribed at the start of cold in the head, and other slight feverish conditions.

Five grains of Dover's Powder taken at bedtime, and followed by a very hot lemonade or hot whisky and lemon, is a favourite old-fashioned treatment for “nipping in the bud” an oncoming cold. Because of its contained opium, however, Dover's Powder should always be looked upon as a dangerous drug which never should be used except when prescribed by a physician.

**DRAINAGE OF WOUNDS.** When the surfaces of a clean, germ-free wound can be brought together, no drainage is necessary. But when a cavity exists, as sometimes happens in bullet and other wounds, it is necessary to drain away serum fluids and to prevent the collection of pus. For this purpose a rubber or a glass tube (in abdominal cases) is inserted. A few strands of antiseptic gauze and, in some abdominal cases, long strips of gauze, serve admirably for drainage purposes.





Boyer

SECTION OF A TWENTIETH-CENTURY HOUSE SHOWING THE MODERN SYSTEM OF DRAINAGE  
None of the sewage nor any gas can escape before its entry into the main sewer, and there is no risk of the soil or drinking water being contaminated.

From a drawing in the Paris Museum of Hygiene.

Both in acute and chronic abscesses and in all infected deep wounds, drainage tubes are usually necessary to carry off the pus. They must be of larger bore for this thick fluid than for the thin serum of a non-purulent wound. The tube should be inserted almost to the bottom of the abscess-cavity, and the projecting end cut off level with the surface.

**DRAINS.** When renting or buying a house, it is always desirable to have the drains examined by a competent man. In old houses, they are often defective. In some cases they run under the basement, and when a leakage occurs, dampness and the escape of foul gases make the house unhealthy.

Sewer or drain gas are perhaps not quite so dangerous as was formerly supposed. But although they may not give rise directly to any infectious disease, they gradually lower the health. When this happens, a person is, of course, more liable to fall a victim to any of the infectious diseases.

The most common result of the escape of sewer gas into a house is sore throat. Servants who work in sculleries or near sinks are especially liable to it. Sometimes several or all the members of the household are made vaguely ill without any apparent cause. They may suffer from depression and loss of appetite, headache, and perhaps diarrhœa. After a time they become anæmic. In these cases the drains should be carefully examined.



STREET DRAINAGE EIGHTY YEARS AGO

Boyer

Showing the gutters with open communication to the sewer in the Rue St. Antoine, Paris, in 1830.  
From a drawing in the Paris Museum of H<sup>ig</sup>iene.

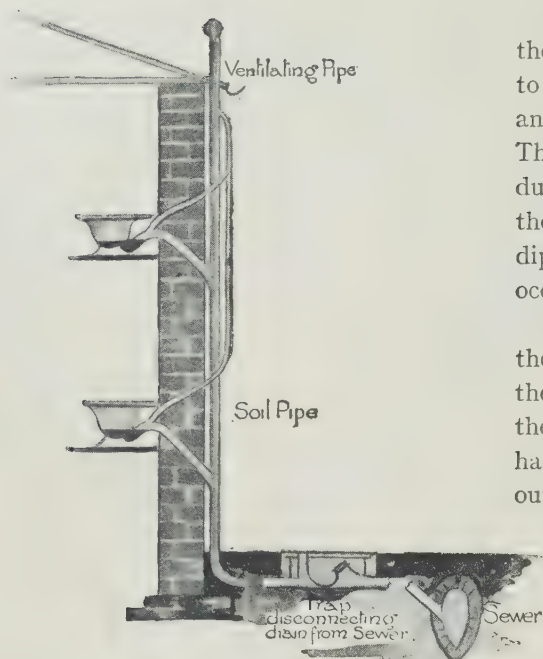


Boyer

## MODERN STREET DRAINAGE

The Rue St. Antoine, Paris, in 1912. In the centre is the Metropolitan Railway, on the right the main collecting sewer.  
From a drawing in the Paris Museum of Hygiene.





SECTION OF PART OF HOUSE SHOWING PROPER CONNECTION OF SOIL PIPE AND ITS VENTILATION

When the throat is affected, there is always an increased liability to catch diphtheria, if there are any cases of that disease about. The sewer gas itself does not produce this disease, but by lowering the resistance of the throat to diphtheria germs, it favours its occurrence.

Leakage of liquid matter from the drains produces dampness of the soil. If the drains run under the house, this is particularly harmful. But even when it occurs outside, the foul liquid may find its way under the basement. In these circumstances the occupants are liable to suffer from rheumatism and lumbago.

In country houses, leakage from the drains may contaminate wells from which drinking water is obtained. Diarrhoea and dysentery may originate in this way. But the great danger of such an accident is that if anyone in the house is suffering from typhoid fever, the other members may become infected.

The purpose of drains is to carry off waste matter from water-closets, waste water from sinks, baths, etc., and rain-water. They should be so constructed as to do this as quickly as possible. Consequently their slope, direction, and bore are of importance. The slope of drains varies according to their diameter. For most average-sized houses a four-inch drain is used. For big buildings the diameter should be greater. If the drain is too large, it is not thoroughly flushed. Hence the diameter will depend on the quantity of liquid ordinarily passing through.

The usual slope is as follows :

For a 4-inch pipe	..	..	..	1 in 40.
For a 5-inch drain	..	..	..	1 in 50.
For a 6-inch drain	..	..	..	1 in 60.

The waste pipes should descend perpendicularly to the ground. The direction of the drain towards the sewer should be a straight line, if possible. If a curve is necessary, it should be a large one. The drain pipe should not join the sewer at a right angle, but at an acute angle. This is necessary to prevent blocking.



Drain pipes are made either of glazed earthenware or cast iron. The joints of earthenware pipes should be sealed with cement, not clay as was formerly used in many cases; the joints of iron pipes are made watertight with molten lead.

Iron pipes are usually coated inside and outside with a rust-proof material. When drains are necessarily placed under a house, iron pipes are better than earthenware. They should be laid on a six-inch bed of concrete, and it is desirable to cover them with a similar thickness of concrete. The covering layer is necessary when earthenware pipes are used under a house. Iron has the advantage over earthenware that sections can be made of greater length; consequently there are fewer joints, and less danger of leakage. But iron pipes cost more.

The joints should be very carefully made. If defectively sealed they allow leakage of liquid; if there is any projection at the joint within the pipe, accumulation of the contents occurs.

The pipe from the watercloset is the only one which directly communicates with the drain. The waste and rain pipes open above ground, their contents then flowing into a gully. All these pipes should be placed outside a house, and they should run perpendicularly downward.

Soil pipes from the watercloset are sometimes made of iron, but the best material is lead. They should be  $3\frac{1}{2}$  or 4 inches in diameter. The lead pipes are made without seams in the following way. Molten lead is forced through an orifice by hydraulic pressure applied to a piston which has a core that forms the bore of the pipe. Seamed lead pipes are liable to leak, and should not be used. As the soil-pipe is the one through which the sewer gas may enter a house, the joints should be perfectly made, and the pipe should be trapped and ventilated (*see below*).

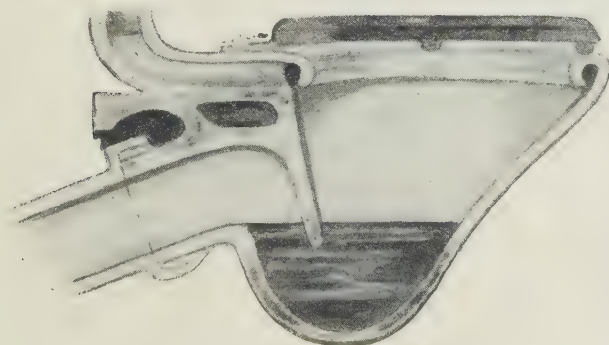
As was said about waste pipes from sinks and baths, overflow pipes from

cisterns and rain-water pipes must all discharge into the open air. Otherwise there would be danger of drain gas, or even sewer gas getting into the houses, and drain gas is said to be more harmful than sewer-gas.

Sink and bath pipes need usually to be more



WATER SEAL, OR TRAP,  
FOR DRAINS



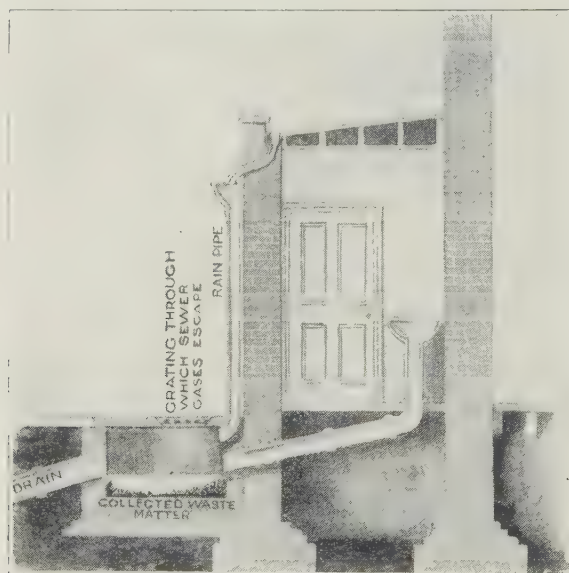
WASH-DOWN CLOSET WITH WATER SEAL

than 10 inches in diameter. They may open directly over the gully, or discharge a little distance from it into an open channel. Sometimes they are made to open under the grating. But this is not the best method, for if the water in the gully at any time rises over the opening of the waste-pipe, gas may escape into the house. Sometimes the water from baths and from sinks in the upper part of a house is discharged into the rain-water pipe. This is a bad practice, as the rain-water pipe is liable to become foul. The soil-pipe from the watercloset should never open into the rain-water pipe, nor should the latter be used for ventilating purposes.

The gully is of considerable importance. It should be well made and efficiently trapped (*see below*). The grating should be kept free from obstruction by leaves and dirt. Grease and other substances collect at the bottom. Hence the gully should be cleared out periodically.

It is best to arrange that the rain-water pipe should discharge into the same gully as the waste-water pipes from the house. Otherwise, in dry weather, the trap in a gully receiving only rain-water may become defective

from evaporation of its contents and allow gases to escape.



WASTE PIPES WITHOUT TRAPS CONNECTED DIRECTLY TO DRAIN

**Drain Traps** are placed in soil and waste-pipes and in gullies to prevent the backward escape of gas. They are of several varieties—some good, some bad, and they consist essentially of bends in the pipes which permanently contain water. The water seals the trap so that ordinarily no gas can pass. The best trap is made somewhat in the form of a letter "S." Reference to the figure *page 629* will show how the water acts

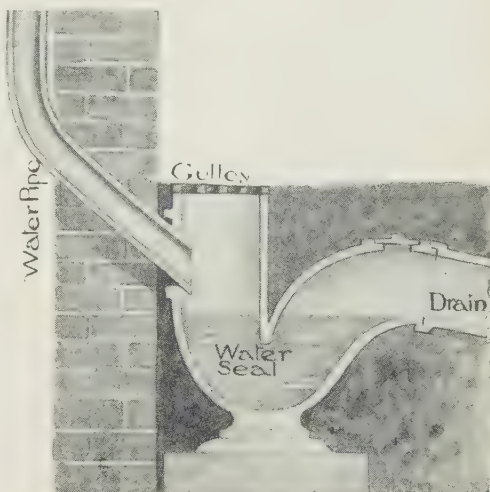
as an obstruction to the passage of gas. The part in which water normally stands is called the seal of the trap. It should not be less than  $1\frac{1}{2}$  inches.

Gullies should be trapped to prevent the escape of sewer gas. Although no drain or sewer gas can get into the waste-pipe from a sink (as it opens into the air), this pipe becomes foul from adhering grease, and it should be trapped, the trap being placed as near the sink as possible.

A screw-plug should be fixed to the lowest point of the trap to allow cleansing from time to time. Even when sealed by the contained water, a trap may admit gases to the house because the water absorbs gas from the drain side, and gives it off at the other side. Moreover, the water in a trap is liable to become foul. The trap, therefore, should be self-cleansing. For this reason it must be so constructed that at each flushing the contents of water are changed.

Sometimes the water seal is broken, and gas passes through the trap. This may occur under the following circumstances. (1) If the pressure of gas in the drain is very great, as it may be when the drain is not ventilated. (2) If the water in the trap evaporates, as it does in a rain-water gully trap in dry weather. (3) If powerful flushing carries the water out of the trap. (4) When syphonage occurs, as it sometimes does in the absence of ventilation.

The essential points in a trap are that the depth of water is sufficient to seal it against the passage of gases, that it does not become inoperative as a result of evaporation, that its contents of



WASTE PIPES PROPERLY DISCONNECTED FROM DRAIN BY TRAPS

water are changed at each flushing, and that it is not emptied either by a powerful flushing or by syphonage.

**Ventilation of Drains and Traps** is very necessary. The sink waste-pipe should be ventilated by a pipe entering just above the trap. The drain-pipe may be ventilated through the soil pipe. In drains it is necessary to have an inlet for air as well as an outlet for gas. Ventilating pipes should be carried above the eaves. If they open lower down, and especially if near a window or door, gas may enter the house.

**Manholes** are chambers constructed at the junction of several drains, or near the point of union of the drain with the sewer. A manhole is usually built of brick; through it the main drain runs, and into it the branch drains open. It allows accumulation of sewage to be removed, and serves to prevent the passage of sewer gas into the drains.

**Sinks** should be made of glazed white ware, and placed in a well-lighted part of the scullery. Lead sinks are more difficult to keep clean. Stone sinks always look dirty. As little soiled water as possible should be allowed to enter the sink pipe.

**Cesspools**, which in the earlier half of the last century were to be found attached to the mansions of the rich in London, are now seldom used except in the country. They should be placed as far as is practicable from the house, and should be well built, covered, and ventilated. Drains leading to the cesspool should have effective traps to prevent the passage of gas. Great care should be taken to guard against leakage into wells supplying drinking water.

**Testing Drains.** Several methods are used to test drains for defects. If oil of peppermint is poured into the highest watercloset, and the closet is then flushed with hot water, the odour of the peppermint may be perceived wherever a leakage exists. A mixture of phosphorus and asafoetida, as well as other strong-smelling substances, are also used in this way. The smoke test is carried out by pumping smoke from cotton-waste and other substances into the drains. These reveal only comparatively serious defects. In the case of new drains, it is necessary to apply a more stringent test, and this may be done with water or air. In the air test, openings in the system of drainage are tightly plugged, usually with a drain-bag made of waterproof canvas or indiarubber. Air is then forced in under a pressure of four or five pounds to the square inch. Well-constructed drains should bear this pressure without leaking. In the water test, the outlet or lower end of the drain is plugged as well as all other openings, except that of the highest gully. Water is then poured into the level of the highest gully. The water is left in for at least half an hour, and the level should not sink during that period. Care should be taken to make the plugging perfect.

Sewers of course are under the management of the public authorities. The house-owner is responsible for the drains. And as many cases of illness arise from imperfect pipes, traps, or joints, he should realise his responsibility.

**DRASTICS** are the class of purgative medicines which act strongly, and produce watery evacuations of the bowel.

Examples are aloes, jalap, colocynth, and castor oil.

**DRAUGHT** is the name given to a liquid medicine when the whole of it is intended to be taken in one dose.

**DREAMS.** From the medical point of view dreams in the vast majority of cases have little or no significance. But when they are of an unpleasant nature, and occur night after night, it is well to have a doctor's advice. They may, in this case, be symptomatic of disease of the brain, heart, or some other part of the body.

It is quite natural for most people in good health to dream frequently while others dream very rarely. The cause of this difference is not well understood. Dreams result from partial wakefulness. Some "centres" of the brain are asleep and inactive; others are more or less wakeful and active. Usually the intellect and the will are soundly asleep, the imagination



and the memory partially awake. This explains the strange character of our dreams. Memories of the past become interwoven with incidents of a day or two before, and with these are intermingled sensations from the surface of the body caused by pressure of the bedclothes, draughts, itching of the skin, etc., as well as sensations arising in the stomach, intestine, and other organs. When awake, and able to use our judgment, we can separate all these impressions, and put them in their proper place. When the judgment is asleep they are blended into odd and marvellous pictures.

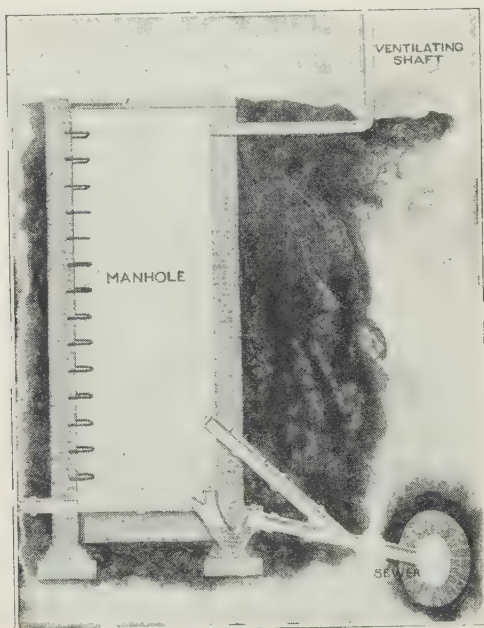
It is said that all dreams are based on incidents of a day or two before being often coloured by old memories, especially those of early love affairs.

The character of a dream depends very much on the condition of the body. Thus indigestion and a loaded stomach or intestine give rise to dreams in which there are depression, anxiety, fear, and often a sensation of falling from a height. A painful spot in any part of the body may suggest ideas of torture. Oppression of the chest sometimes produces dreams, in which one has a feeling of suffocation, fear, and helplessness.

Outside agencies are equally operative. Loud noises may originate dreams of tumult. The bite of a flea may suggest a stab with a knife, and the buzzing of a fly a storm.

We dream most in childhood, that period of life when the imagination is active and the nervous system sensitive and unstable.

When dreams are very frequent, and particularly when they are unpleasant, a search for the cause should be made. Most often this will be found to be some error in diet. Usually the error consists in eating indigestible food, or overloading the stomach late at night. In the case of children it may be the swallowing of fruit skins, eating currant cake or pudding (dried currants are almost wholly indigestible), eating oatmeal porridge perhaps not well cooked, etc. When the digestion is not strong, drinking tea or coffee at night may produce exciting dreams. On the other hand, both in children and adults, the dreaming may be due to going to bed with an empty stomach. A



MANHOLE WITH SEWER TRAP AND VENTILATION

substantial meal should be taken within two and a half hours of bedtime, or failing that, something light, such as milk and biscuits, milk pudding, etc., half an hour or an hour before retiring.

When the bowels are constipated, dreaming is often of a very distressing nature. A dose of castor oil or cascara sagrada will usually set matters right.

Nervous excitement and mental overwork are frequently the cause of dreaming and disturbed sleep.

In children especially they should be avoided. Children should have no lessons to learn within a couple of hours of going to bed. They should not be told ghost stories or terrifying tales, and young children should not be allowed to look at pictures of wild animals or anything that can be woven into a dream of horror.

A scolding or punishment should never be administered shortly before bedtime (or at any other time when it can possibly be avoided); the child should not be sent asleep with fear of punishment or its mother's anger next day. A good rule to observe is that a child should never go to bed unhappy.

For those who dream much the chief measures are to correct indigestion and constipation, to avoid heavy meals at bedtime, not to go to bed with an empty stomach, not to overtax the intellect or emotions, and to take plenty of open air exercise (but not to the point of fatigue) during the day.

Occasionally dreams may indicate disease, and call for medical treatment. The heart and the brain when disordered may give rise to very unpleasant dreams. Nervous irritability is another common cause, and in this case a short course of the bromides will probably effect a cure.

Sleep, of course, is not so sound and refreshing as it should be when dreams disturb it. Therefore, although ordinarily of no importance, dreams when persistent should always be attended to.

### **DRESS.** *See* CLOTHING.

**DRESSINGS** for wounds, etc., are of many kinds, each having its advantages and disadvantages. One of the best is cyanide gauze, made by immersing gauze in a solution of the double cyanide of mercury and zinc. It should be moistened with warm water.

The mistake should not be made of thinking that any antiseptic dressing can make up for the slightest carelessness in the treatment of a wound. If dressings are allowed to become contaminated through being kept loose in a dusty or dirty cupboard they may actually infect the wound with germs instead of protecting it.

A simple aseptic dressing, that is, one which itself is germ free, can be prepared by baking ordinary absorbed cotton in an oven until it is slightly scorched.

Carbolic gauze is a powerful antiseptic and soothing at the same time. Iodoform gauze is a mild and stimulating dressing, but it only prevents the development of germs, and does not destroy them. It should contain 10 to 20 per cent. of iodoform. Salicylic gauze is effective if it contains about 8 per cent. of salicylic acid. Xeroform and boric gauze are both mild and efficient. All these can be obtained ready prepared, but they should be bought from a firm of repute, and care should be taken to see that the gauze is soft and absorbent.

Among lotions which may be applied by immersing sterilized gauze or wool in them are the following :

Carbolic solution	..	..	..	..	..	1 in 40
Lysol	..	..	..	..	..	1 in 200
Perchloride of mercury	..	..	..	..	..	1 in 2,000
Boric acid	..	..	..	..	..	1 in 30

**DROPPED WRIST** is the result of loss of power in the muscles of the back of the forearm. Any injury to the nerve which supplies the muscles, such as a blow or a knife wound, or the surrounding of the nerve by callous thrown out when a broken arm-bone is healing, may cause complete or partial dropped wrist. Certain forms of nerve inflammation, such as alcoholic neuritis or lead-poisoning, or even prolonged pressure on the nerve as when sleeping with the head on the arm, may cause temporary wrist drop.

**Treatment.** When due to pressure on the nerve or simple chill, no treatment is required, the drop-wrist passing off after a day or two. If the main nerve in the upper-arm is completely severed (as by a knife-cut or other wound), the only hope of cure lies in an operation in which the cut ends of the nerve are brought together again.

When nerve inflammation from chronic alcoholism or lead-poisoning is the cause, the treatment laid down for these conditions (see **ALCOHOLISM** and **LEAD POISONING**) is all that is required. Where the callous thrown out in the natural repair of a broken upper-arm bone has involved the nerve sufficiently



DROPPED WRIST

to cause wrist-drop, a surgical operation may be necessary to free the nerve from the surrounding callous.

**DROPSY** is a water-logging of the tissues with fluid which has escaped from the blood-vessels. (*See also ASCITES.*)

Dropsy is not a disease in itself, but should always be looked on as a symptom of some other disease. For example, dropsy may develop in late heart disease, in acute and chronic Bright's disease, in cirrhosis of the liver, in cancer of the stomach, in consumption, and in scarlet fever.

**DROPSY IN HEART DISEASE.** As a rule the dropsical swelling begins about the feet and ankles, extending upwards. Depending upon the extent of the heart trouble, the abdominal cavity and the lung sacs may be more or less filled with free fluid. In mild cases, where the heart is only slightly affected, dropsy may show itself simply as a slight puffiness about the ankles at night.

As a general rule heart dropsy is more noticeable after the patient has been taking active exercise. His weak heart has not the power to pump the blood vigorously through the vessels, and the watery parts of the semi-stagnant blood escapes through the thin walled veins into the surrounding tissues.

**DROPSY FROM KIDNEY DISEASE** is usually most noticeable in the morning. The patient wakes up with perhaps slight puffiness about the eyes. By noon, however, this may have entirely disappeared. In advanced cases, however, the whole body may become waterlogged and swollen with fluid.

**DROPSY FROM LIVER CIRRHOSIS** usually shows itself as fluid in the abdominal cavity. Here the changes in the liver prevent the normal flow of blood through the liver vessels. As a result a portion of the fluid part of the blood escapes through the vessel walls into the abdominal cavity.

In any of these three varieties, whether due to heart disease, kidney trouble or liver disease, the dropsy may effect practically the whole of the body. The feet and the ankles, the loose tissues under the eyelids, and any of the cavities of the body, such as the abdomen or the pleural sacs which contain the lungs, may become waterlogged.

**Treatment.** Any permanent successful treatment of dropsy must aim at removing its cause. For example, the dropsy may follow on heart weakness, the diseased organ not having strength to propel the blood back along the veins. The only rational treatment here, where the blood serum is escaping into the tissues through the walls of the overcharged veins, is something that will strengthen the heart's action. The best drugs here are digitalis and strophanthus, both of which regulate the heart's action and cause it to beat more forcibly.

In the same way where the dropsy is due to kidney disease, drugs which will stimulate these organs into better carrying out their duties of ridding the body of waste fluids are needed. (*See DIURETICS.*)





A WOMEN'S WARD



A MALE WARD

ST. MARY'S HOSPITAL, PRÆD STREET, PADDINGTON, W.

Where the dropsy results from general body weakness, anæmia, etc., tonic treatment to build up the general strength is needed. In the same way in dropsy from liver disease (cirrhosis), the causative condition must be treated. (See under headings HEART DISEASE, KIDNEY DISEASE, LIVER DISEASE, ANÆMIA, etc.)

Frequently in advanced liver disease the dropsy of the abdomen resists all remedial measures. Here the physician may have to insert a tube through the walls of the abdomen to allow the excess of fluid to escape. This procedure, of course, can only be carried out by the medical man in attendance.

Although it cannot be too strongly impressed on the patient that it is simply a waste of time trying to treat the dropsy alone without also attempting to remove its cause, the physician will sometimes find the following mixture useful in those cases where from heart weakness a slight swelling of the legs and ankles is regularly noticeable at night :

℞	Tincture of digitalis	..	..	..	..	1	drachm
	Potassium acetate	..	..	..	..	3	drachms
	Solution of strychnine hydrochloride	..	..	..	..	$\frac{1}{2}$	drachm
	Infusion of senega	..	..	..	..	6	ounces

Make into a mixture. Take one tablespoonful three times a day in a little water after meals.

In the same way, where with chronic kidney disease the patient is doing all that he can to keep his complaint under control by careful dieting, and yet is troubled with puffiness of the eyelids, etc., on waking in the morning, the following mixture may sometimes be used with advantage :

℞	Potassium acetate	..	..	..	..	1	drachm
	Potassium nitrate	..	..	..	..	1	..
	Spirit of nitrous ether	..	..	..	..	4	drachms
	Spirit of juniper	..	..	..	..	2	..
	Decoction of broom	..	..	enough to make	..	8	ounces

Make into mixture. Take two tablespoonsful every three hours.

Where the liver is at fault, three grains of calomel at bedtime, followed next morning by a heaped teaspoonful of Epsom salts in a very little water, is often very useful in purging the body of the excess of fluid.

It should be remembered that dropsy may be the result of several different diseases. For example, advanced heart disease, by causing interference with the circulation in the kidneys, may lead to either kidney dropsy or heart dropsy. It is essential, therefore, that the physician should be called in to make a thorough personal examination of the patient with a view of determining at the start the exact cause of the dropsy.

**DROWNING** results when sufficient water is drawn into the air-tubes and cells of the lungs to prevent the lungs from carrying out their normal function of filling themselves with air.



#### TREATMENT OF THE APPARENTLY DROWNED

Having placed patient on his back, with head to the side, and cleared back of the tongue, place a pad under his stomach.



Then turn patient over on stomach and empty mouth of water. Immediately thereafter turn him on to his back again and begin artificial respiration (*see* page 139).

**Treatment of the Apparently Drowned.** The first thing to do is to lay the patient on his back, turn the head to the side, and sweep the finger around the back of the tongue to clear away any mucus which may have accumulated there. Then, without an instant's delay, some method of artificial respiration (*see under* ARTIFICIAL RESPIRATION, page 139) should at once be begun.



No matter though the patient give no sign of life whatsoever and has been in the water for a long time, a serious effort should be made to see whether artificial respiration will not start up again the normal process of breathing.

When finally the patient commences to show some signs of recovery, and has begun to breathe perceptibly of himself, artificial respiration may be left off, and the rescuer's efforts should be confined to encouraging the circulation and bringing back a natural warmth to the body.

The patient's wet clothes should be got off him as quickly as possible, and he should be well wrapped in hot blankets, while hot-water bottles (not hot enough to burn his skin) should be placed in the armpits and at the feet.

As soon as he can swallow, a cup of very hot black coffee or a half-ounce of whisky or brandy may be given by the mouth.

The patient should be kept quiet in bed for at least twenty-four hours—better still, two or three days—until the heart fully recovers from the results of the strain thrown upon it.

#### END OF VOLUME I.



"VIEW OF THE LONDON HOSPITAL IN THE WHITECHAPEL ROAD WITH THE GROUNDS AND COUNTRY ADJACENT" IN 1753

From an engraving after a painting by William Bellers.















